

## SUPPLEMENT.

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

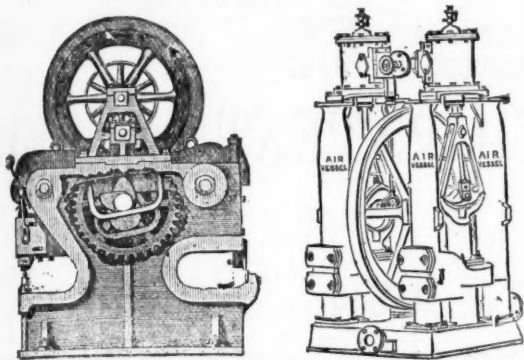
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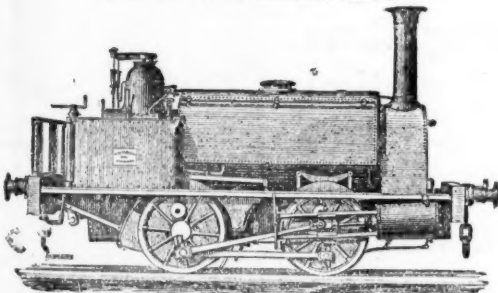
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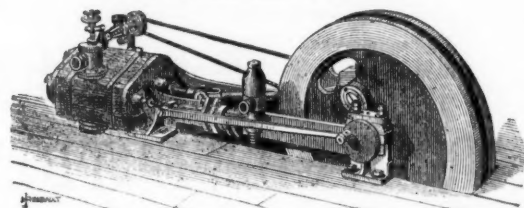
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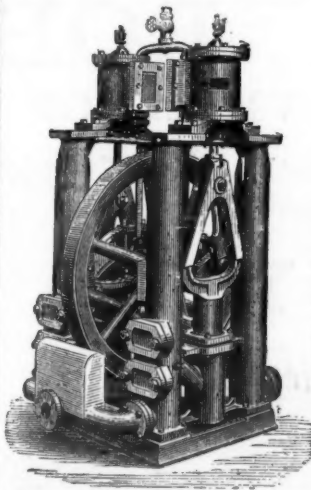
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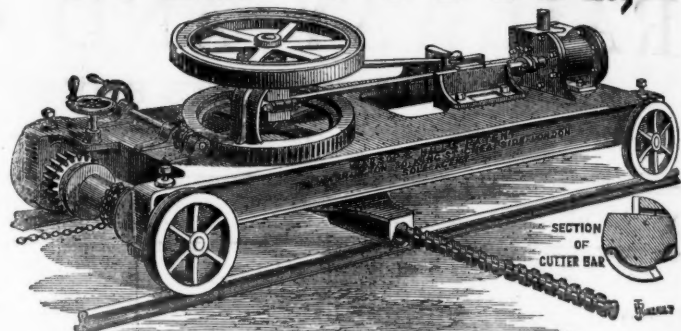
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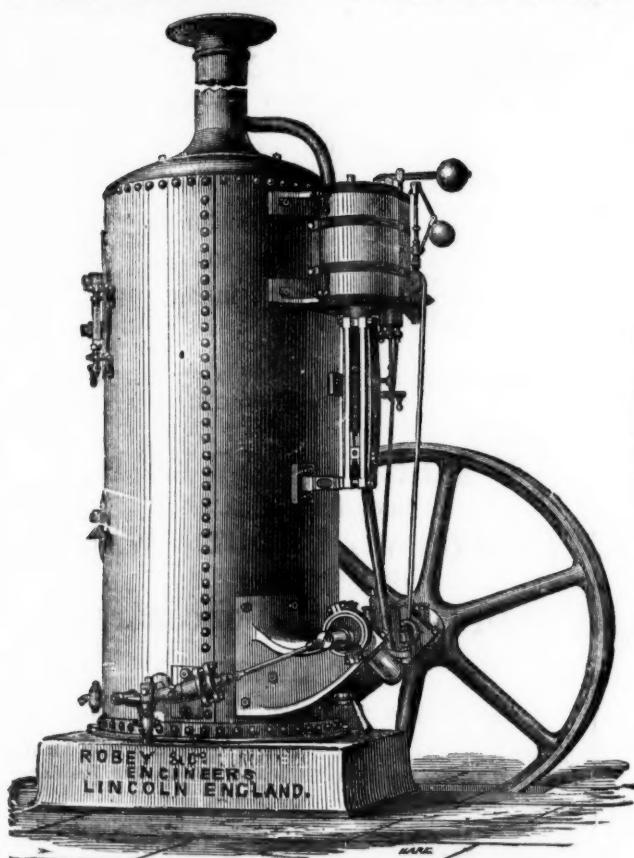
30, KING STREET, CHEAPSIDE,  
LONDON. E.C.

Patent No. 4136

Patent No. 4150

Dated 16th December, 1873.

Dated 17th December, 1873.

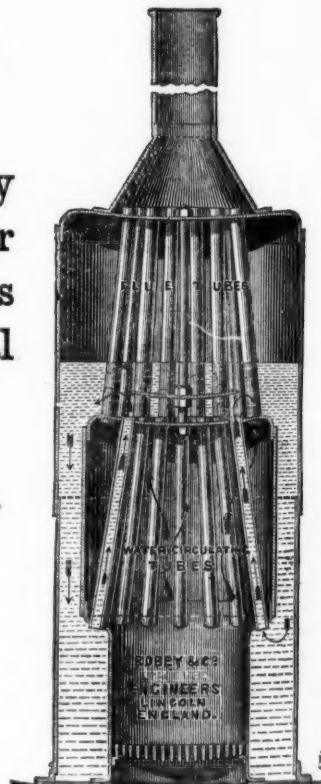
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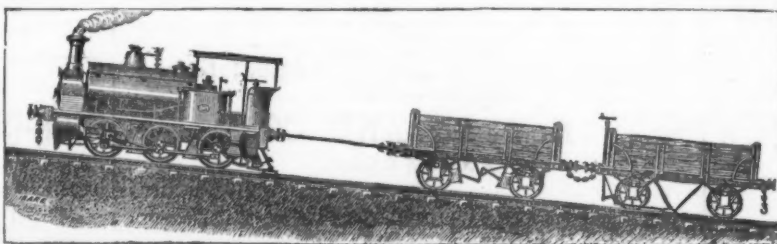
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## Original Correspondence.

## WIRE TRAMWAYS.

SIR,—I have the pleasure of sending to you a copy of a portion of a letter just received from the engineer of some manganese mines in New Zealand, who has just erected a wire tramway in that island. As this is of considerable importance to the mining industry in those parts, I hope you will favour it with a place in your widely-circulated Journal.—*Cheapside, London, Oct. 20.* W. CARRINGTON.

"I have the pleasure of informing you that I have just completed the erection of the first line in New Zealand. Two of your lines were sent out to New Zealand some five years ago, but had never been erected until the Manganese Company, lately started, consulted me upon the practicability of making use of them to convey the ore from the mountain to a shipping place. After due consideration I advised the buying of both, and out of them have constructed a line 1½ mile in length; it starts from a point 500 ft. above the sea, then passes over some deep gulleys with spans up to 600 ft., then comes down to a mango swamp of 500 yards in width, and then for a distance of 1000 yards over the water of a land-locked bay, where a 30-ton barge is moored, carrying the steam-engine and machinery for driving the tramway. This is placed in sufficient depth to admit of a vessel drawing 13 ft. to come alongside and load. This tramway is erected three miles from Russell, Bay of Islands; and in connection with the erection of the tramway I have taken charge of and opened the manganese mines, and have already won over 1000 tons of mineral. The wire tramway system has enabled me to lay out the whole plan of works on a far more comprehensive system than would have otherwise been practicable. Thus, I have at the mountain terminus two sheds, 40 ft. by 20 ft., situated 100 yards apart, and in line with the tramway, the wire-rope of which is continued right through both sheds to a terminus some distance behind. I can thus shunt and load the boxes in either shed; these sheds are also so placed that short lines can be run to the different openings where mineral is found, and thus it can be brought down direct by gravitation to the sorting sheds from all sides. I contemplate continuing the main line up and over a saddle in the mountain, and on for a distance of two miles.

I anticipate a great demand for these tramways in New Zealand, as they are the only means which many of the most valuable mines can employ for delivering their produce at anything like a reasonable price. This opinion expressed in the above communication has been amply borne out in other countries where many wire tramways are being worked, and where others are being erected frequently. Amongst those lately put up we may mention one of three miles in Vancouver's Island for the Harewood Coal Mine, one for some manganese mines in the Cape of Good Hope, another in the Island of Mauritius, and many others in the West Indies, Italy, India, Central America, &c.

Another use of the wire tramway, which has been largely adopted in this country and abroad, is that of short lines, about 100 to 500 yards in length, for connecting the different departments of large factories, bringing coal from the mine or railway to the boiler-houses, or conveying goods from the ground or lower stories of a warehouse to a greater elevation and over intervening obstructions. Tramways for this purpose are at work, and giving complete satisfaction at the following places, amongst many others:—Worrall and Co., dyers, Salford; Watson and Stark, printers, Ramsbottom; Ashton and Co., printers, Hyde; Knowles and Co., printers, Bury; Butterworth and Co., wool spinners, Rochdale; Linoleum Manufacturing Company, Staines; Odam's Chemical Manure Company (Limited), London; Norton and Co., Huddersfield; Redpath and Co., Montreal; Carew and Co., Shahjehanpore, India, &c. By such tramways, driven in most cases by the available power of the mill, an immense amount of manual and other labour may be avoided."

## MINING IN QUEENSLAND.

SIR,—The quantity of tin forwarded from Warwick Terminus for the month of July, 1875, was:—

	Tons	cwt.	qrs.	lbs.
Stream tin	308	19	1	24
Ingots	4	12	1	18
Total	313	11	3	14

Showing a decrease on the previous month, and being 183 tons less than for July, 1874, and the least quantity forwarded since the production of tin commenced, in any one month, excepting January last, when the wet stopped the carriage of tin from the field to the railway. There is no doubt that before long the present price (74d. in London) must affect production. The best class of stream tin of 72 fine is not worth more than 34d. on the field, and few buyers at even that figure. Some months ago I mentioned in one of these letters that many tributes were let as high as 35d., certainly one-third of the tributes of the whole field were let at and above that sum. These are all working now at a loss to the proprietors, who will at every opportunity "knack" the lettings at such prices. It also becomes a question of importance to the proprietors of the other two-thirds whether they consider it worth their while continuing the tributes (or re-letting) with such a small margin of profit as there is now left them, and the risk of letting in the face of increased stocks in London, and a falling market. I think not. It is my conviction that the proprietors will throughout the whole field "knack" as each tribute runs out, and that so soon as the quantity of tin at present said to be held on the field is forwarded a marked falling off in production may be anticipated. I cannot explain to your readers the awful heaviness on the tin market here; there is no use sending it down from the mines unless intended for smelting and shipment. A price is quoted nominally, but no one here will buy. I have not heard of a transaction in tin for the past month; all second-class parcels of stream tin are being forwarded direct to the smelters on miners' own account. Everyone connected with the trade seems to be waiting for the last drop; whether they are correct, or whether we have seen it at its lowest, time alone can decide.

There has been a late discovery of splendid stream tin within 60 miles of Brisbane, and close to the railway line. If extensive, it may have a marked effect on supply, as it could be worked for 10d. per ton less than the Stanthorpe tin.

The Palmer gold fields are still turning out rich, and large numbers of Chinese are arriving at Cooktown. The number of Chinese now on the field is variously estimated at from 12,000 to 20,000; they are quiet and orderly.—*Brisbane, Aug. 13.* RESIDENT.

## COPPER MINING ON LAKE SUPERIOR.

SIR,—On the 9th inst. I forwarded you the number of hoisting and pumping engines, stamps, and number of heads on the copper mines of Lake Superior. As to the size and power of those engines I am unable to state, but suffice it to say, nearly all of them are not only able to command their work at the present depth of the mines, but are powerful enough to run those mines much deeper. Stamping is nearly all done by steam, and in no case do I hear of a lack of power. We have stamps of different make, and in duty will stamp from 2 to 2½ tons in 24 hours each head, except Balls' stamps, which will stamp from 60 to over 100 tons in 24 hours each head. Even in those lodes having a heavy mixture of conglomerate I have seen one head of Balls' stamps crush over 100 tons in 24 hours. Calumet and Hecla are very heavily charged with conglomerate, and they stamp from 20,000 to 22,000 tons a month of 26 days with seven heads of Balls' stamps.

In addition to the machinery I have named there are several good saw mills in good condition, for the use of, and owned by, the different mining companies. In fact, the mines are well provided with the necessary outfits for a vigorous prosecution, and all that is wanted is a little more capital to place many of them on a profitable basis. Water charges are light. It is a rare occurrence even in our deepest mines to see pitwork over 6 or 7 inch pumps. The Quincy and Pewabic Mines, I believe, are from 1600 to 1700 feet deep each, and their pumps are not over 7 inches; working not exceeding 10 hours in 24, average the year round. The roads to and

from the mines, and in all directions, allows a team of two horses to haul from 2000 lbs. to 5000 lbs. as a load. Each location and mine owns timber-land enough to supply itself with all kinds of timbers for mining purposes, and for fuel for engines and dwelling-houses. Dwelling-houses enough generally on each location for the accommodation of officers and workmen. Excellent harbours for landing freight, and warehouses for the safe keeping of same.

Portage Lake, Sept. 24.

A MINER.

## SILVER MINING IN PERU.

SIR,—With reference to the good wishes expressed in last week's Journal towards the undertaking in which my friend Mr. Henry Sewell has just embarked, and in which I cordially concur, it is to be hoped that the return of this accomplished and experienced mining engineer to the scenes of his earliest experiences in silver mining—where, in the Highlands of Peru, at an elevation of over 15,000 feet above the sea level, he succeeded in successfully chloridising refractory silver ores with no other fuel than the dung of the llama—an impetus may once more be communicated to the much neglected mines of this magnificent country, which only requires a moderate infusion of capital and skilled supervision to restore them to that same prosperous state in which they flooded the Treasury of Spain, while exciting the wonder and envy of the world.

Although silver mining in Peru has not as yet recovered from the shock of the War of Independence, which resulted in the almost entire withdrawal of Spanish capital, it is well known to those who have been on the spot and taken the trouble to investigate the matter (myself among the number) that nearly all those old mines where operations have been either totally suspended, or only carried on at intervals since the Spaniards were driven out, are capable of yielding ores of as good an average assay as heretofore; while with the improved processes and appliances for the reduction of silver ores which the discoveries of Nevada have brought to light during the last 15 years, millions of tons of tailings and desmontes, or refuse ores, will now yield a handsome profit.

"Jumping" and blackmailing are unknown accomplishments in Peru, while brigandage and highway robbery are so rarely heard of as not to be taken into account in estimating risks. It will, therefore, be seen that this country, and not less so that of Upper Peru, now forming the Republic of Bolivia, containing the silver mountain of Potosi, and many other rich mines, offers some important advantages to English capitalists for which we look in vain in her sister silver-bearing republics of Mexico and the United States.

WM. T. RICKARD, F.C.S.

City Mining and Assay Offices, Bloomfield-street, London Will.

## THE NEVADA MINES.

SIR,—I enclose a letter from a correspondent in Nevada, which gives an interesting account of the mines and machinery there. It is something unusual to hear of pits 370 fathoms deep.

Glasgow, Oct. 18.

AN ENGINEER.

"Gold Hill, Sept. 21.— . . . As there is no hydraulic mining carried on in Nevada, I am sorry I cannot furnish you with the information required, but will make enquiries concerning it, and let you know—it will help me along considerably, by bringing this style of mining under my notice. There are some quite heavy hoisting works up here. The Risdon have just finished the machinery for one of the largest mines up here. There are two hoisting engines, coupled, 24 in. diameter, by 4 ft. stroke; the gear is 21 ft. diameter, the teeth in it being all cut; the drum is conical, being 22 ft. diameter at one end by 12 ft. at the other, and made for round wire-rope. These engines are to have a pair of water-engines attached to the reel shaft, for counterbalancing the cage and cable. The mine is situated close to the side of the mountain, and they are building a reservoir capable of holding 80,000 gallons of water, and it will give a fall of 417 ft. They are also putting in a new set of pumping machinery, the engine is 24 in. diameter, by 5-ft. stroke, and has puppet valves. There are two gears, 13 ft. diameter by 14-in. face, with the wrist pins for the connecting-rod working between them. This connecting-rod connects the balance-bob, and that attaches to the pumps. They also have a new air compressor for forcing air down the mines; the two air cylinders are 24 in. diameter. This mine is about 2200 feet deep. At one time they took out a large quantity of pay ore, but for two or three years back they have been prospecting only. The California Mine, situated a short distance from the Ophir, is also having new machinery on the direct-acting principle. The pumping engine is 40 in. diameter, by 8-ft. stroke, puppet valves, and has Davie's differential valve motion attached to it. This is the first place this valve motion has been adopted at. The connecting-rod connects the cross-head to the balance-bob in this case. The pumps are 12 in. diameter by 6-ft. stroke. This machinery will be ready to start in a week or two, when I will let you know the results. At the same place there is also being erected a pair of direct-acting hoisting engines. The cylinders are 30 in. diameter by 7-ft. stroke. There are two hoisting reels on the engine-shaft. As both hoisting and pumping are worked with gearing, the direct-acting motion is watched very closely. This mine is but 500 feet deep, but it has the richest rock up here. It is this, and the Consolidated Virginia, an adjoining mine, where the bonanza was struck last summer. When everything is in running order they expect to take out \$4,000,000 worth of bullion. They are also putting up a 72-stamp mill. The Consolidated Virginia is at present running nine mills on its own ore, which assays from \$30,000 to \$100,000 per ton. This bank failure has put a stop to considerable work for a month or so. The Risdon were going to put in a new style of pumping machinery into one of the largest mines up here; it was a combination pump for pumping out three mines, it was to be worked by hydraulic power from an accumulator. This will likely go ahead again shortly. They say the hydraulic elevators at the Palace Hotel are working splendidly. The hotel will be opened by the middle of October. I am now working at the second mine since coming up; the first was finished the end of last month, everything working splendidly. The second set of machinery is exactly the same as the first—one hoisting engine, 20 in. by 36 in., with two sets of hoisting reels, the pinions on the engine shaft being loose, and driven by clutches. Each set has a brake wheel, by means of which they can lower the cages independent of the engine. They use flat steel-wire rope, about 4 in. wide, some of which they get from England. The pumping engine is the same as that at the Ophir—double geared, the cylinder being 24 in. by 5 ft. The pumps are 13 in. diameter by 8-ft. stroke; the foundation bolts go 25 ft. into the ground, the engines being set on solid granite, dressed off, and the intermediate work being set on large sole plates on top of heavy timbers. This shaft is 800 feet deep, and they have taken out no ore at all as yet. . . ."

## RICHMOND CONSOLIDATED MINING COMPANY—

## ITS FINANCIAL POSITION, AND ITS ORE RESERVES.

SIR,—The shareholders in this company have not received a dividend since May; but between that period and the time the next quarterly dividend should have been paid the market was so "manipulated" that the aggregate value of the property was made to show an apparent advance to something like \$64,000. Outsiders were unaware of this sudden inflation—the quotation having been forced up from 10d. to 16d. when it transpired that Prof. Price's report upon the mine was about to be issued to the shareholders. Prof. Price's report was issued, but its effect was more than discounted by large speculative purchases having been previously made on behalf of those to whom the contents of the document must have been previously communicated by telegram. The result was that immediately after the report had been issued the quotation began to decline; this downward movement was continued until the official announcement was made "that in consequence of the financial crisis in California, the bullion agent was unable to make further advances, and that, therefore, the dividend must be postponed." It was hinted at the time that as soon as the Bank of California resumed payment so soon would the quarterly dividend be declared and paid. In passing, it may be noted that the Bank of California has resumed business, but the dividend has not been even declared. It is not my intention to enquire into the truth of the statement that the actual

reason the bullion agent declined to make further advances is because there is no longer a sufficient margin between the bullion in hand and the amount previously advanced—my object is to obtain some light in connection with the ore reserves now in the mine.

Mr. Clarence King was the first man who ventured an opinion upon this moot subject. Certain theories were propounded, and it is only just to say they have to some extent proved to be based upon fact. The next authority appeared upon the scene with boldness enough to aver from actual measurement that the ore reserves at that time (June, 1875) were 100,000 tons—12,000 tons in the 200 ft. level, 26,000 tons in the 3rd and 4th levels, and 70,000 tons in the 5th and 6th levels was Prof. Price.

The one question I wish to ask through your columns is—how do these eminently speculative estimates accord with the practical statements of Mr. Rickard? If in June last, when Prof. Price was there, the reserves were equal to a return of between two or three years at the rate of 3000 tons per month, from what part of the mine have the returns since then been extracted, as Mr. Rickard has stated that the ore in the upper part of the mine—apparently referring to that above the 500 ft. level—"is low grade, which has seriously affected the returns."

Another question arises—how does the estimated average value of the ore in reserve, as calculated by Prof. Price, compare with the net returns now being yielded from the stopes?

These are vital questions, demanding urgent consideration.

Glasgow, Oct. 20.

BROKER.

## RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—Six days' run up to Oct. 1, 1874, was \$43,000, price of shares 6d. 15s.; seven days' run up to Sept. 28, 1875, \$41,000, price of shares 10d.; seven days' run up to Oct. 13, 1874, \$44,000, price of shares 6d. 10s.; seven days' run up to Oct. 5, 1875, \$45,000, price of shares 9d. 15s.; seven days' run up to Oct. 24, 1874, \$50,000, price of shares 6d. 15s.; seven days' run up to Oct. 12, 1875, \$46,000, price of shares 9d. 7s. 6d. Will anyone outside the walls of a lunatic asylum inform me why, with actually less returns than at the corresponding period of last year, Richmond shares should be now selling at 3d. per share more, representing an aggregate increase upon the 54,000 shares of the large sum of 162,000.

Oct. 21.

A MEMBER OF THE STOCK EXCHANGE.

## RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—I see that the returns from the Richmond Mine for seven weeks last year, from Sept. 1, averaged \$36,000 per week. The returns must be almost equal to this from Sept. 1 for the present year, and now with the best six months before us, with the lowest part of the mine in ore, the stopes looking well, and with 15s. for two dividends due in December shares are kept down by the "bears" at 9d. 5s. May I ask how can this be managed? H. C.

Oct. 21.

## ROCK DRILLS—PROGRESS IN THE SUTRO TUNNEL.

SIR,—I have again correctly copied from the San Francisco "Mining and Scientific Press," of Sept. 11, the following report of progress in the Suto Tunnel for the week ending Sept. 1:—

Number of feet in tunnel August 22	10,663
Number of feet driven during week	103

Distance in, Sept. 1	10,666
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Remarks.—Rock, solid quartz, hard drilling, but good blasting. Delayed 24 hours laying track, timbering, &c. A quartz ledge was struck August 9 at a point 10,437 ft. from mouth, extending 65 ft. in thickness, when 52 feet of porphyry was encountered. At this point another lode having a width of 112 feet extended to present face, where the drills have just developed another clay wall; whether mere quartz or country rock will follow is not yet demonstrated. The lodes passed thus far had no value at the point crossed; drifting and cross-cutting are highly desirable, and may develop valuable ore. Total progress for August 370 feet; quantity of water 58 in.; temperature at head 84°, and at the mouth 76°.

Also, from the San Francisco "Stock Exchange," bearing date Sept. 25. The following is the report of progress in the Suto Tunnel up to Sept. 22:—

Distance in, Sept. 15	Feet 10,843
Driven since	57

Total	10,900
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Nature of ground.—Soft, picking; only little drilling and blasting. Character of rock: porphyry, mixed with quartz, in loose masses, divided by seams of slipping talcose clay. Delays: timbering in face 50 hours; laying track 5 hours. The ground during the latter half of the past week has been exceedingly treacherous, occasioning several caves near the face, thereby greatly retarding the works. There will probably be for some distance the same character of country overhead. Every precaution is being taken to fully secure the ground against future caves.

Oct. 21.

ARQUERITE.

## ANDRE'S "MINING ENGINEERING."

SIR,—I have to ask your permission to make a few remarks on the review of my work on "Coal Mining," which appeared in the *Mining Journal* of last Saturday. Had your reviewer confined himself to an expression of opinion, no reply from me would have been called for, nor should I have noticed his statements, whatever their character might have been, if they had had reference to myself alone. But, unfortunately, he has thought it desirable to distort facts, and to make misstatements which are likely to do great injury to the persons, other than myself, against whom they are directed. As the *Mining Journal* wields enormous influence, it is highly to be desired that any erroneous statements which it has been led to make by one of its contributors should receive immediate correction.

Your reviewer, after describing my opinions concerning rock drills as "peculiar," proceeds to say that the machines which I have preferred "are precisely those which, when applied in practice, have either worked but inefficiently or have required so much modification as to become almost new inventions." Now, Sir, when I made my examination of the relative merits of the numerous rock drills in existence I was not careful to enquire whether they had attained their present state through several stages of improvement, or if, Venus like, they had sprung in the full perfection of their beauty from the hands of their respective inventors, so that I consider your reviewer's remark entirely beside the question. But if he had read my book with due care he would have seen that I have laid down certain conditions or requirements to be fulfilled by a machine rock drill, and by this standard I have judged each machine. If, therefore, the conclusions to which these conditions lead me are "peculiar," the conditions themselves must partake of the same character; and a sapient critic who can shrewdly guess that "my information is obtained from German sources," should have shown that they did so. Perhaps, Mr. Editor, I ought to tell you that my sources of information were English, French, Belgian, German, and American, and that they were all about equally drawn upon. Again, in support of his assertion that the rock drills I have chosen are worthless, he hints that they are incapable of working continuously, and states that I have not seen a rock drill work for a month at a time. I daresay this individual knows exactly what I have seen and done, and also, it appears, what I have thought, for he informs your readers that I prefer the Blanz to the Colladon air-compressor, though I have never said so. Such questions, however, are personal, and had better be left alone. But I would direct your attention to page 137 of my work, and then ask you whether the misstatement is not evidently wilful. To me, as I before observed, it matters not at all, but such perversions of fact are likely to do incalculable injury to the owners of those machines, and on that account I feel bound to expose them, especially as the *Mining Journal* has always been foremost in bringing the advantages of rock boring by machinery to the notice of the mining public.

The next gross misrepresentation to which I have to direct your attention is contained in the following remarks—"His principal liking, however, is for Brain's powder, and he remarks that it is, 'of course, greatly superior to dynamite, which has an incombustible base.'" Now, Sir, you will see in my book that I make no compa-



tion of Brain's powder with dynamite, and that the quotation cited above is given as the opinion of Mr. Linford, Mr. Brain's chemist. Again, your reviewer makes me say that "coke is of little value unless it can be obtained in large prismatic pieces," wilfully and deliberately leaving out the limiting clause—"for the smelting furnace." This, Sir, is a contented unfair and misleading criticism.

With respect to the opinions of your reviewer, they appear to be almost as "peculiar" as my own. He says, "the poor deluded practical men who have derived their knowledge in the vicinity of collieries" will be startled at being told that true coal is found chiefly in the coal measures. Possibly they may, for "deluded" men are easily startled, and in this fact we may, perhaps, find the explanation of the surprise felt by your reviewer on being informed that "Hignite, in consequence of the processes of mineralisation having been less completely effected in that substance than in anthracite, exhibits its vegetable structure more completely, and, as an effect of the same cause, retains a much larger proportion of volatile matters." It would be interesting to know why he referred to what he is pleased to call "my" tables of sedimentary strata to ascertain the position in the series of the carboniferous rocks. The occurrence may have reference to that "modern view," which it seems I ought to have adopted.

One word more and I will end this already too long letter. Your reviewer challenges me to show what claim the Dawdon winning has to be considered the most difficult on record when we have had such a sinking as the Ryhope, which he says is constantly referred to by those whom he likes so much to designate as "practical men." My reply is that the Dawdon winning was executed 40 years ago, when mining engineers had not the powerful machinery of later years at their disposal, nor the experience of after times to guide them. But in selecting the Dawdon winning my object, as distinctly stated in my book, was to show how little the nature of the means employed, and the character of the methods of procedure adopted, have changed during the last 50 years, the improvements having affected them in degree only.

Craven-street, Oct. 20.

#### COAL MINING—ROCK DRILLS.

Sir,—In your review on Andre's book on "Coal Mining" the following remarks are made in reference to his analysis of the merits of rock drills:—"His views on rock drills are, to say the least, peculiar. The Dubois Francois, one of the most successful in practice yet brought into the market, is placed last in the order of merit in a list of eight, and the drills to which he has given the places of honour are precisely those which when applied in practice have either worked but inefficiently or have required so much modification as to become almost new inventions."

To the latter part of this statement I wish to draw your attention; but I should also like to ask how the reviewer arrives at the conclusion that the Dubois Francois—a machine over 6 ft. in length and 400 lbs. in weight—is "one of the most successful in practice yet brought into the market." The place of honour in Andre's analysis is given to the Darlington Drill; and, according to your reviewer, this is a machine which, when applied in practice, has either worked but inefficiently, or has required so much modification as to become almost a new invention. Now, the Darlington, I take it, has required so little modifying that the machines at present sold are very similar to the earlier ones. Although I do not agree with Mr. Andre in the theoretical manner of analysing the merits of drills, I cannot help thinking that he is perfectly justified in placing Darlington's drill at the top of the tree, and your reviewer will do much good by giving in detail his views on drills, and the grounds upon which he based his analysis of their merits.

COLLIERY MANAGER.

#### COAL MINING IN SCOTLAND.

Sir,—A week or two since a correspondent referred to the absence of a Mining Institute in Glasgow. Considering the amount of capital invested in mining in the county of Lanark—certainly not less than 3,000,000—there is some ground for his remarks. It occurs to me, however, that very much good may be done by correspondence in the press—nay, I am inclined to think quite as much as by any other method; and a band of workers might be got at, including mining and mechanical engineers, mine owners, mine managers, and workmen of all grades, who could not fail to disseminate much useful information.

I propose as a beginning, and with some hesitation, to say a few words on the stoop and room mode of working in the Hamilton coal fields. It seems to me that the rooms being all driven one width or 12 or 13 ft. is a mistake. A roadway of this width, if the roof is at all weak, will not stand without trees in the centre, and sometimes two rows are required. Moreover, in bringing back the stoops, when the last piece of a stoop is worked away, there is too much roof hanging on the trees, and thereby much coal is lost and much wood broken and lost. The "end" and "plane" reed is frequently very imperfectly marked, and when this is the case the places are driven anything but straight, and, as a matter of course, the stoops are not of a regular size. So much is the "reed" neglected, that it is no uncommon thing to see the rooms in one side of the pit going in one direction and those on the other side going 30 or 40° different, and neither going "end" nor "plane." It is clear that the tidest and best working is that where the stoops are square, and where they are on the reed of the coal. It is also apparent that the narrower the places are driven at first, the more coal will be got in the backcoming. But as it is well known that coals from wide places are much rounder than from narrow places, and that coals worked on the plane reed—that is, facing the plane reed—are more easily worked than on the end reed, it would be better if the ends were narrow and the planes wide.

As a rule the Hamilton fields are flat, or nearly so, and coals can readily be brought out either end or plane, so that no inconvenience, or little inconvenience, would arise as regards haulage. I would propose, then, that ends be made the growing places, that they be broken off every chain length, 22 yards apart, and driven not more than 7 ft. wide, and that the "throughers" be on plane, and broken off as seldom as possible—not less than 15 yards apart—these throughers may be driven 4 or 5 yards wide, and "blinded." If they could be broken off every 40 yards so much the better, but that might be too far to carry bratticed air.

It will be easily seen that the pillars so left will admit of being better and more systematically taken out in this way than any other way, and there will be no hurry, for the ends, or main headways, are narrow, and the stoop will be worked off on the plane reed, thus:—A slice on plane (say) 5 yards wide, is taken off from one side, stopping at the middle of the stoop, and thus the greatest amount of roof hanging on wood is 13 yards by 5 yards, equal to 65 square yards. The trees are drawn, the roof falls, and the next piece is taken off in the same way. The same operation is begun from the other side, and so the pillar is leisurely and quietly taken off. I apprehend that few of your mining readers will deny that this is a good way of working pillars, but it has its drawback, and that is, the great amount of wall-cutting. This wall-cutting will cost from 3s. to 3s. 6d. per fathom, besides the common working price; but then so much wood would be saved that even in the first working it would be cheaper, and there can be no doubt that it would be better for taking away the stoops.

Starting away a new pit on this system, then—indeed, on any system—the first point, with the plan before you, is to lay-off the main lines for drawing-roads. Thus, if the levels run east and west, and the rise to the north, a main place should be driven north, and again places No. 45° east, and No. 45° west, the levels would follow level course. These main lines being laid-off, the next point is to find exactly the end and plane reed, and systematically to set off ends 6 or 7 ft. wide, 22 yards apart, as already noted. Should it happen, as it frequently does here, that the plane reed faces the rise, then a place or a pair of narrow places will be run on planes to break the ends out of. It is easily seen that the ends being narrow places will be more speedily won out than if all the places were wide. Another anomaly occurs to me to mention—the practice of leaving large pillars of coal, 120 yards square or more, round the pit bottom. The effect of this is very much to cramp the opening up

of the pit, and very much to interfere with the ventilation. It is a relic of the old system, when the ordinary pillars were left so small that a large pillar of this size was needed to keep the shaft safe, but it is quite unnecessary where pillars are left of the size mentioned. The great point is regularity. Why should ends and planes, and all roads, except the levels, not be driven straight, so as to form square blocks and straight roads? And why should there not be a system followed out in working coal instead of, as is too often the case, being left to chance?

AN ENGINEER.

#### MINERALOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

Sir,—This society now numbers 41 members, nearly all of whom are fellows of the Royal Society, the Geological Society, or the Chemical Society, and the list includes able mineralogists from each of the three kingdoms, so justifying the title proposed for the Society. A general meeting will shortly be called, when the rules and regulations will be finally determined upon. In the meantime I shall be glad to receive the names of scientific or practical mineralogists who may desire to become members, or to be further informed as to the present condition of the society.

J. H. COLLINS.

Truro, Oct. 19.

#### THE CENTRAL SWEDISH IRON AND STEEL COMPANY (LIMITED).

Capital £235,000, in shares of £50 each.—November, 1872.

##### DIRECTORS.

Major-General Sir C. DICKSON, K.C.B.,  
ALEXANDER J. DUNGEON, Shipbuilder, Millwall.  
CHARLES J. GALLOWAY, Knott Mill Ironworks, Manchester.  
Lieut.-Col. JOHN FLETCHER HATHORN, Sun Foundry, Leeds.  
GEORGE MACKENZIE, Esq., J.P., D.L., Merchant, Rood-lane, London.  
THORSTEN NORDENFELT, Clement's-lane, London.

##### CONSULTING ENGINEER.

DAVID FORBES, F.R.S., II, York-place, London.

Sir,—This is one of the wretched concerns started in 1872. It is not so bad as the Emma, for the shares, afterwards reduced to 10s., are now quoted in your list at from 3s. to 5s., but it is bad enough in all conscience, and I propose to say a few words as to its history and progress. For that purpose I have given the names of the principal actors, some of which I suppose have had their share in the direction of a property for which 325,000l. was subscribed, with the hope of getting 30 per cent., and which sum is now rated in the market as worth from 108,000l. to 162,000l.

The company was formed for the purpose of purchasing the estates of Bjorneborg and Frotuna, in Central Sweden; the former contained one charcoal blast-furnace; the latter contained a waterfall. The acreage of land was 38,193 English acres, including 2500 acres of peat bogs, the estimated rental of which was about 7000l., or about 4s. an acre. There were also two mansion houses, which bulked largely in the prospectus, some iron mines, some shares, and a license for a coal mine. In quoting from the prospectus—"In order to obtain the best . . . advice as to the value and resources of the above, David Forbes, Esq., was requested to visit the whole properties . . . and to give his opinion," and he went. In his report he says—"I shall take into consideration, first, their present condition, and, secondly, the best means for their development;" and he estimates the "net income obtainable, without erecting new works, to be 14,929l. 7000l. of which is made up by estimating the 'profit on rough bars and blooms at 2l. 16s. per ton.'"

He proposes, however, to convert "the charcoal-pig direct from the blast-furnace into Bessemer steel," and to erect another furnace at Bjorneborg, and "two medium-sized furnaces at Frotuna." As the supply of charcoal is limited, he proposes importing 39,000 tons of coke from England, and shows that by an expenditure of 150,000l. 28,500 tons of steel rails, plates, and tyres would be made, which would yield a profit of 132,000l., and that the total annual profit would be 141,487l. He modestly says—"These figures speak for themselves, and require no further comments from me." I wonder if he would say so now. We will now turn from this gentleman of "high position" to the directors.

The directors said the new works at Bjorneborg would be completed in nine months, when the dividend was estimated at 16 per cent., and those at Frotuna in sixteen months, when 29 per cent. was the estimated profit. The vendor guaranteed 9 per cent. for the first year, and took 40,000l. of stock. In a word, the directors thought the prospects were such "as to fully justify the directors in submitting this company to the public as offering an investment of a very safe and remunerative character."

The first meeting of the company was held on June 4, 1872. Col. Hathorn and Mr. Mackenzie reported that they went out to Sweden on March 2, and they say—"We have to express our very high opinion of the condition of this property, and the way in which it has been managed." The other directors expressed their "firm conviction as to the soundness of the undertaking in which the company had engaged." One director, Mr. Galloway, resigned, and Mr. Bagnal, jun., resigned in his stead. There was a Lord Dunsany, who "wanted to know," but "Prof. Forbes" was appealed to, and calmed him down.

The next meeting appears to have been held in August, 1873, fourteen months afterwards, and again General Dickson, or rather Major-General Sir Collingwood Dickson, K.C.B., is in the chair, and again the modesty of Prof. Forbes is made apparent. "Gentlemen, there is no deception," the professor said, "14,929l., and lo! it is 15,086l. 19s. 7d." just 157l. 19s. 7d. more (mark the coppers), "and this is 7½ per cent. on the capital paid up, as at March, when the balance was taken. It is true we directors promised that by the end of March nine months you would be getting 16 per cent., but the new works at Bjorneborg are so nearly completed, and the most favourable results are expected when they are in operation." The Chairman leaves Mr. Bagnal, the new director, to speak; he (Mr. Bagnal) returned from Sweden three days before. He has pleasure in giving them a short account of his visit. Speaking as one accustomed to the largest ironworks, he was glad to see "the large blocks of granite." It was important to know that men behaved quietly. It was a splendid estate; he only wished he had more shares; they had "plenty enough to supply the works for half a century." On the motion of a shareholder 75 guineas were awarded to Messrs. R. Fletcher. A shareholder wanted to know how about Frotuna. He had been at Frotuna, and 400 men were engaged; but the professor was laid on him, and a few passes quieted him. If they could obtain a sufficient supply of coke even at present prices they would be warranted in proceeding with the works at Frotuna, but it was absolutely necessary to have this, and it was impossible to obtain it. It did not occur to the sapient gentleman to ask why then did they spend 14,000l. there.

The next meeting was held in October, 1874, and again the military came to the front. The directors reported that the two furnaces at Bjorneborg were in blast, and the steelworks had commenced operations, and again they had exceeded their expectations. "The Professor" had estimated 5599 tons, and, behold, they were producing at the rate of 7250 tons. Isn't it wonderful? Again, gentlemen, there is no deception. They forgot to add that on the completion of these works the Professor's estimate of profit was 42,000l. To make a long story short, they showed an apparent profit, after paying directors' and London expenses—over 3000l.—of 2682l. 6s. 3d.

The noble Lord Dunsany thought, like the celebrated member of his class, that the report was a thing "no fellow could understand." The Professor does not appear to have been present, or, at least, did not speak, for they turned on Mr. Bagnal on him, who got so muddled with the "feudal system" that even Lord Dunsany forbore to ask any more questions. They then proposed to sell Frotuna estate, waterfall and all, and broke up.

The last meeting was held in June, 1875. The military baronet no longer presided; he had retired, so had Col. Fletcher Hathorn, so had Mr. George Mackenzie, J.P., D.L.—all, mind you, "slid" of their own accord, so far as I know. Only Alexander John Dudgeon was left of the originals. Thomas Bagnal was Chairman, surrounded by other City men. No word this time of the Professor. They had a poor story. The works, which were to pay 16 per cent., had lost 10,908l. 8s. 11d.; they had spent all their money, and not one-half the works were begun.

The only thing they saw for it was to issue 40,000l. of debentures at 8 per cent., to keep what they had going. In other words the whole of the money is muddled away, and if there really is anything in the property it has never got a chance. In other words, the whole of the magnificent structure, including Mr. Bagnal's block of granite, is instead of paying 16 per cent. paying nothing. Who is to blame for all this? Was there any promotion money going? If so, who got it? What did "the Professor" get for his report? All these and many more the directors past and present might answer and oblige an unfortunate—

SHAREHOLDER.

#### THE WEST OF ENGLAND FIRE-CLAY, BITUMEN, AND CHEMICAL COMPANY (LIMITED), CALSTOCK.

Sir,—A "Callingtonian," a week or two since in the *Mining Journal*, made some enquiries after Dr. Emmens and the patent Nascent copper process. We had hoped ere this to have seen the said patent process in full operation at the works of the above-named company, situated at Greenhill. It is really sad to look at these magnificent works, and take into consideration the amount of mental and physical energy that must have been called into requisition in planning and constructing them, also the amount of money spent, and to see so little good resulting from it all. Three double furnaces for roasting arsenical pyrites have been constructed, but only one and a-half, or two at the utmost, are kept at work. The refining furnaces, as a rule, are not more than half worked. The precipitating and lixiviating works have all been admirably laid out, and partly constructed, but remain unfinished and quite useless. The tin smelting furnaces have been planned, constructed, and finished for some time, but are idle at present. Copper, lead, and silver houses have been erected, but at present are only huge shells, and are comparatively useless. Fire-brick making is being carried on, but in a manner that scarcely reflects any credit on those concerned. The arsenic department seems to be quite a success, and the quality of the manufactured article appears, from the position it has taken on the market, to be second to none in the kingdom, a result that is, no doubt, owing in a great measure to the fact that there is at the head of this department a practical, steady man, who knows how to do his work, and does it.

The original scheme of these works, as devised and propounded by the fertile brain and the facile pen of Dr. Emmens, was undoubtedly a grand one. To get everything out from the muddle and low-priced ores, to use up everything, and consequently make everything contribute its quota to the general good of the concern, is not only a proper but a highly rational theory, and ought not to be difficult in practice. Nor do we believe that it is, and we cannot help hoping that, notwithstanding the present state of things, we shall at no distant day see these splendid works in full operation, and turning out, not only first-class fine goods and refined arsenics, but slabs of white tin, ingots of copper, lead, and silver, and perchance gold. Also we hope to see the sulphur that is liberated in the process of roasting the muddies, and that now escapes up the tall chimney, caught and made into sulphuric acid, that will convert the burnt Kimmeridge shale from which the mineral oil has been extracted and utilised into a first-class artificial manure. Nelson wrote on one occasion, "Were I to die this moment, 'want of frigates' would be found stamped on my heart." We have no doubt the want of capital to complete and carry on the West of England Works is just now felt quite as keenly by the sensitive and highly-cultivated mind of Dr. Emmens as the want of frigates was felt at the time by the immortal hero above mentioned, that he might complete the destruction of his country's enemies.

The capital of the company ought to be at once raised to half a million, or 600,000l. This would enable the general manager to pay off all liabilities, to complete the unfinished parts of the concern, and would place the whole affair in a position of independence and comfort as to the future. Parcels of black tin might at once be purchased, and this department started without delay. Mineral properties situated in the immediate vicinity of the works and abounding with the minerals required might be acquired in the present state of mining on very easy terms, and the company would be able to sell in the dearest market and to buy in the cheapest, instead of being victimised, as every company is, and must be, that is steeped to the neck in difficulties for the want of capital. What this affair wants to make it a grand success is sufficient capital and competent management.—*Calstock, Oct. 21.*

J. M.

#### CORNISH MINING—ITS EVILS AND THEIR REMEDIES—No. I.

Sir,—We feel some diffidence in entering on this subject, which has already been ably treated in the *Journal* by several correspondents. We are aware that the wrongs of shareholders—and especially of those included in that numerous and wealthy class—"outsiders"—cannot be exposed without giving offence to another numerous and wealthy class—merchants; that we cannot show how worthless mines are floated without causing some Cornish captains to imagine that they are the butt of our remarks, and yet our endeavour will be to deal with the matter at issue in a fair, dispassionate, and unbiased manner, assured that any statements made will be for the general weal of the county, and not for party interests, and if we say anything that is not considered warranted by facts, we shall be very happy to see the dissentients stating their views, in order that both sides of the question may be fairly and truthfully discussed.

Few enterprises are carried on under such varied and ever-changing circumstances as Cornish mining, and such are its exigencies and requirements that nothing but sound, sterling, practical knowledge is able to prosecute it successfully. Decision and perseverance are in an eminent degree called forth, and an accurate acquaintance with the formation and peculiarities of the ore-bearing ground, and nothing but these qualities and acquisitions can prosecute mining successfully. Even the most accurate knowledge is often at fault, and the greatest discoveries of mineral known in the county have frequently been the result of pure accident. The digging drains, planting gate posts, rooting out trees, have all been the means of discoveries. Dowsing, too, has its advocates, whose belief remains unshaken, and is rendered all the more sturdy because of opposition.

When a great mine is found, however, it is not thrown open to the public, its value is not proclaimed by advertisements, brokers' recommendations, and broken-down mine agents' flatterer praise; its dividends first announce that a prize has been discovered. These mines are not floated in thousands of share, but often in mere units. Dolcoath Mine was held in 1790s once, West Seton in 512ths, Botallack in 200ths, and Wheal Owles in 80ths, and all these are under the Cost-book System. This is a system of keeping and rendering accounts which is peculiar to the county. The exact method adopted in submitting the accounts to the adventurers varies somewhat, but the general principle is that separate concurrent accounts are not allowable, and that all the mine accounts must appear under the head of general expenditure for material and labour, &c. No capital plant accounts are existant under this system, and every three or four months the adventurers have a statement submitted to them. True, these statements are often only produced after the most careful study on the part of the financial agent, and represent only what the state of affairs ought to be instead of what it actually is, but still the Cost-book plan, when fairly worked, is undoubtedly very well suited to Cornish mining, and the remedy for misstatements is in the hands of the shareholders, for if they strenuously oppose the introduction of "suspense accounts," and all these perversions of the system, they will not be misled by figures designedly falsified, or facts which are hidden.

What renders the system so suspicious is the shadowy outline of the Stannary Court, as it looms grimly in the background. Can we wonder at the timidity of investors as they think of this frightful bogie. Still their fear is unwarranted, for if investments are judiciously made there can be but little if any fear of a catastrophe of this kind; of course when people rush madly into speculation there is a very strong probability that they will find out all the terrors of this institution. Caution is necessary, and if due care is taken one need never fear the law. The Cost-book System is the most economical where it is stringently carried out, and we see no reason why



it should give place to the limited liability incorporated companies. In these money is often lavished, and at times companies are at work before the whole of the shares are subscribed for or taken up, and then there is continual impecuniosity and misery all throughout the existence of the undertaking. What is wanted is thorough honesty and integrity. There is often too much trickery and selfishness in connection with the floating of companies, and until this is done away with we shall, of course, have disheartening failures. The system under which the accounts are kept matters not so much as that of a man of unimpeachable honour be at the helm, a man who will pursue his way regardless of censure, oblivious of praise, and will, by working the mine with a view to ultimate success, confound those parasitic mine brokers who feed on the weaknesses of those who invest in Cornish mines. EXPERIENTIA DOCTET.

Oct. 18.

## GWENNAP MINING DISTRICT.

SIR.—In a recent letter to the Journal I stated my conviction that mining in Gwennap would revive, and everyone who wishes well to the inhabitants would rejoice to witness it. My conviction is founded on the following circumstances:—

1.—A portion of the parish is entirely undeveloped, and another large portion partially so, consequently there is good reason for fresh speculation; and I hope ere long to see the formation of companies for exploring virgin ground, and for resuming operations in those mines which, in the opinion of intelligent agents, should be proved at greater depth—Tingtang, for instance.

2.—There are several mines now at work in the parish which present prospects of great success. West Gorland is improving, and is apparently bidding for the Dividend List. I may say the same of Cathedral Mine; but the most promising of all, I think, is West Pol-dice, on which I hope in a few days to send a detailed report. The principal shareholder is Sir F. M. Williams, Bart., M.P., the descendant of a family distinguished for their success in mining. Whatever may be said of the product of other mining parishes in Cornwall, I may safely say that not one of them has given so much profit as Gwennap.

I subjoin a few specimens:—

Consolidated Mines, last working, only	£ 600,000
Clifford—say	300,000
Wheal Unity	350,000
Wheal Damsel	200,000
West Damsel, about	50,000
Wheal Square, perhaps	70,000
Tresavean	450,000
Penstruthal, about	100,000
Old Wheal Jewell	300,000
Wheal Jewell	300,000
Wheal Buller (Gwennap), about	100,000
Treskerby and Wheal Chance, about	200,000
Total	£3,020,000

Besides the profit in Tingtang, Wheal Gorland, United Mines, &c.

Can any one of your readers venture to assert that any parish in the British Isles has yielded so much profit from metallic mines?

Truro, Oct. 20.

R. SYMONS.

## MINING IN CORNWALL.

SIR.—Under this heading Capt. T. Mitchell gives his impressions during a recent visit to this county. There is much sound sense in his remarks. He asks, "If the price of metals improved, and the general state of the county returned to its usual activity, would there be any chance for a resuscitation of some of these mines?" Undoubtedly, I think the day is not far distant when the whole run from Wheal Damsel to Great North Downs will be at work. Between these mines lie Great Wheal Busy, Boscawen, Hallenbeagle, East Downs, Wheal Rose, and Great North Downs. The great bar to the working of these mines is the water, and unless they are worked together they cannot be worked at all. Years ago the whole run was working when Wheal Busy stopped, and one by one the others were drowned, but leaving a good mine in Great North Downs and a good tin lode in Wheal Rose. At that time there were seven or eight pumping-engines at work, and when two years ago operations were commenced with two engines the result was a foregone conclusion. If a gigantic company was formed with a capital of (say) £250,000, these mines could be made to pay; very powerful engines could be erected at Wheal Busy, Wheal Rose, and North Downs, sump-shafts, and these supplemented by smaller engines here and there would easily keep the water. Mining enterprise is not yet dead in Cornwall, and when investors have tired of American schemes, of Emmas and Flagstaffs, they will come back to home mines—to Cornwall.—Oct. 18.

A CORNISHMAN.

## A VISIT TO WEST MARIA AND FORTESCUE MINES.

SIR.—As several shareholders of West Maria have been calling attention in the Journal to the difference between the market price and the actual value of the above neglected security, they may like to know the opinion of one who has recently visited the mine, and who, although a Non-Practical (to use the late Mr. Ennor's favourite epithet), yet believes he has sufficient intelligence to gather the true state of affairs from enquiries very carefully entered into among the workpeople and others in the neighbourhood.

Having to call on an old patient of mine in the neighbourhood of Tavistock, who believed I understood his complaint better than anyone else, I thought I would prolong my stay, and visit West Maria and Fortescue Copper and Arsenic Mine, in which I was much interested as an original shareholder. In the first place I visited the mine, and must admit that I met with the most painstaking desire on the part of the officials to explain matters, and make everything clear to my inexperienced eyes, and, as far as I could judge, everything was most satisfactory, and my first impulse after visiting the mine was to telegraph to my broker to buy the shares largely. Upon further reflection I came to the conclusion that there was no immediate hurry, and that as I should be in the neighbourhood another week or two I might obtain further information, which might possibly modify my opinion; and I further thought that one's first visit to a mine is rather apt to give a false impression perhaps, and it has always been my plan to err on the side of caution—so I decided to try and obtain the opinion of those who could have no object in giving too favourable a view to the probabilities of success.

It would be useless on my part to give shareholders (to whom alone I address myself) the values of the different parts of the mine, as they receive reports of them from Glasgow. The sales of copper are also shown in this Journal at regular intervals, and will possibly be given in the number in which this letter appears, while the important and profitable sales of arsenic are given in the four-monthly statement of accounts.

My decided conclusion (drawn from all the sources before mentioned) is that the mine will prove a paying concern at the present price of arsenic and copper, even with the present development of the mine, in addition to which there is the certainty (according to the most experienced men in the neighbourhood) of rich and important discoveries being made if only perseverance is still used, and it is well known among those who know anything at all about it that perseverance is a distinctive characteristic of the managers of West Maria, who have persevered in the face of discouragement and difficulties for about thirteen years, and are not now likely to give up just when they have reached the depth near which they may reasonably expect success when the situation of the mine in relation to its celebrated neighbours is taken into consideration.

Fortunately for genuine mining enterprise, there are a large class of shareholders who when they have paid 4l. 10s. each for shares do not care to part with them at about 6s. or 8s. each, and, although this tenacity may seem to the brokers foolishness, and to themselves be really a stumbling-block, yet it is easily understood by those who, like myself, are endowed with the same pertinacity, and it is for their sakes I take the trouble to pen these lines, based upon what I saw and heard in the parish of Lamerton.

To those who have borne the burden and heat in the shape of paying calls, which must have seemed to them, as they have often to me, almost interminable, it must be some satisfaction that the calling season is now at an end, and that the dividend stage is not so very far off as some may think (upon which opinion I have acted, as Glasgow brokers know a few weeks since); and those who have paid 4l. 10s. on their shares should take the matter into consideration whether they would not do well to buy at the present price,

which is so ridiculously low that the matter cannot be considered a speculation if we reckon the value of the machinery and materials on the mine. When the turning point is reached it will be too late for any but dealers to profit, and other men will enter into the reward of our labours.

Some years ago I employed a mining engineer, now well known in Devonshire, to report and advise me on this property, which he did in favour of purchasing largely. Calling on him a short time ago, I reproached him for his advice and its result. He said he had had no reason so recall his opinion, although success had been longer delayed than he had anticipated, but that, he said, was characteristic of some of the greatest successes in mining, and he enumerated various instances nearly similar in which prices were lowest when the mine was nearest its best condition, and those cases, too, occurred in the vicinity of West Maria.

I must here mention that my not resting content with the opinion of the officials of the mine alone is not intended to cast any reflection on them, as I have always found them straightforward and honourable, and, in the main, the opinions I gathered from other sources tallied with theirs. I hope the original shareholders of West Maria (of whom I am told there are some remaining) will take heart of grace.—London, Oct. 20.

MEDICUS.

## WEST MARIA AND FORTESCUE CONSOLS.

SIR.—I have been told that at the next meeting of the company, which will be held in about two or three weeks time, a proposition will be made to wind-up. If such a step is really contemplated I should like to know the circumstances or reasons which suggest or justify such action, for my informant tells me that recently 50 tons of arsenic, at 7l. per ton, has been sold, and 160 tons of ore sampled. Such returns ought surely to meet the cost of the mine, and undoubtedly would do so if the tributes were not too high. A glance at the recent cost sheets will show whether my informant is correct. A further examination of the cost sheets might also possibly show that with the present returns even a profit could be made. Whether this be so or not, I think before the mine is finally abandoned the shareholders should satisfy themselves on three points.—1. If the mine is economically managed.—2. If the present returns ought not to pay cost.—3. If there are no prospects of discoveries being made if the necessary explorations are prosecuted.

A WELL-WISHER.

## "SCIPPIO," AND THE PENNERLEY MINE.

SIR.—As the columns of your valuable Journal are always open to the disaffected as well as the satisfied shareholders, I beg to ask your insertion of this letter with respect to the above mining company. Your correspondent's letter, which appeared in the Journal of the 9th inst., signed "Scipio," is, I consider, calculated to unduly raise the expectations of the shareholders as to an early dividend being paid by the company. I am afraid that when the financial position of the company and prospects of the mine are fairly examined there will be left but little ground for sanguine "Scipio's" prophecy being fulfilled—at any rate, for a considerable period.

As a shareholder I was much dissatisfied with the very unsatisfactory balance-sheet and report presented at the last half-yearly meeting, and was surprised that they were not more sharply criticised than they were by the proprietors present. The balance-sheet was professedly made up to June 7, 1875, and showed a balance to the credit of profit and loss account of 1458l. 15s., and no wonder that simple-minded shareholders should have expected a dividend, especially with such a balance, and the mine said to be making over 200l. profit monthly. But not so. The directors could not consent to a distribution of this imaginary, but certified, balance of profit. The Secretary, be it said to his praise, frankly admitted that this apparent overflowing of the exchequer was not exactly accurate, he stating that (although the accounts were made up to June 7) the costs for May, amounting to at least 800l., were not brought into the accounts; and further, that they were behind with their deliveries of lead ore, and that samplings would have to be suspended for a month in order to put matters straight. In other words, this means that the accounts showed on the credit side sales of lead to the amount of 1187l. 15s. 10d., which ought not to have appeared there, as the lead ore had not been raised; therefore, if we add to the debit side the cost for May omitted, and deduct from the credit side the 1200l. for lead ore sold which had not been raised, the accounts would then show a balance to the debit of profit and loss of 528l. 19s. 4d., instead of the declared balance in favour of the company of 1458l. 15s., and which the shareholders were to believe was available for dividends.

The samplings or sales were to be suspended for one month, in order to put matters straight, and this Capt. Harris hoped to be able to regain during the present half-year by more frequent sales, as he assured the shareholders, in reply to Mr. Snell, that there was no truth whatever in the statement that the mine was falling off. But what do we now find to be the state of things at Pennerley? Certainly we cannot complain about the captain's reports; untold riches are being discovered in winzes, valued at 5 tons per fathom downwards, and Potter's Pit the captain will inform you is a mine of itself. Yet since the meeting in June the writer has only seen one sale of 50 tons reported, worth about 1200l., while three months' costs have been incurred, which amounts to about 2400l. It certainly appears to me that it behoves the directors and those responsible for keeping the accounts to render them in a more satisfactory manner than Pennerley's were at the last meeting. The writer when at the mine shortly before the meeting was informed by one of the officials that he understood a dividend was going to be declared, and believing this information to be correct he increased his holding by buying more shares at a premium, and now their value is 50 per cent. less than the price then paid for them. If this mine is to become a dividend-paying concern it must be managed and developed in a much more satisfactory manner than at present. I quite believe that this mine itself ought to pay dividends, but "hope deferred maketh the heart sick."

SHAREHOLDER.

## [ADVERTISEMENT.]

## WEST CHIVERTON, AND "CIRCULAR MINING."

SIR.—Several shareholders in the West Chiverton Mine have forwarded to me a copy of a private circular issued by Messrs. Halford and Co., of Lombard-street, in which the following passage appears:—"West Chiverton Mine shares have declined to 15l. 10s., and we have pointed out on several previous occasions, there is nothing whatever either in the position or prospects of this mine to warrant anything like one-half the present price of the shares." The motive for such a gratuitous statement is at once apparent—to induce the shareholders to sell out their West Chiverton shares, and put the money into the peculiar companies that Messrs. Halford and Co. advocate. I have already exposed similar attempts, and, as the secretary of the West Chiverton Mine, I feel it my bounden duty publicly to caution my shareholders against being frightened out of their shares and involved into buying other shares of a very doubtful market value. I need not recapitulate the history of West Chiverton, as it is too well known; suffice it to say that after being one of the best paying dividend mines it was by bad management reduced almost to ruin, and that the new management have since overcome all difficulties, and restored it to a dividend position. The last dividend in August was 7s. 6d. per share, and the next is likely to be still larger. There are plenty of buyers on the market, but shares are very scarce, having been heavily bought—i.e., sold on speculation for a fall, which may account for the attempt made to depreciate the property.

I think it is only right that the public should know who Messrs. Halford and Co. are, who thus privately volunteer advice upon mining properties, as it may enable them to estimate its proper value. Some years ago a Mr. Ross, with a variety of Christian names, upon which the changes were frequently rung, took office in Nicholas-lane, and introduced to the notice of the public several companies that proved rotten to the core. Many of your readers may have only too good reasons to remember Brynpostig, New Brynpostig, Brynyswift, Brading Harbour Oyster Fisheries, Tuolumne, &c., all of which culminated disastrously, and quickly subsided into the winding up Court. Previous to this there appeared a firm styled Ross, Lanson, and Bedford, who were connected with some (to the promoters) highly remunerative slate quarries, all of which I believe came to grief in a very short space of time. The said Mr. Ross has since migrated to Cornwall, where he now appears as Ross and Co., or George Ross.

The companies which these apparently various firms—and there are other branches to which it is not necessary here to allude—are recommending are Wye Valley, West Wye Valley, Melindur Valley, Grogwinion, and Blaenowenbach, Llanidloes, &c., all of which are not generally negotiable in the Stock Exchange or Mining Market. The best, presumably, is Wye Valley, a company constituted with a capital of 30,000l., in 10,000 shares of 3l. each, the quoted price of which is 4l. to 5l., or at the medium price, (say) 45,000l. for the mine, and the dividends

paid appear to be at the rate of about 7 per cent. per annum. West Chiverton is only in 3000 shares, or, at 10l., (say) 45,000l. for the mine, and the dividends are at a higher rate of interest, and likely to be greatly increased. The mine grew into favour with the public on account of its intrinsic merit, and did not require the assistance of private circulars.

From the Memorandum of Agreement of Wye Valley, made July 2, 1874, between Thomas Delahay, of No. 1, Palace-street, Middlesex, of the one part, and Robert Williams, of Moulmeys, Putney, architect, and Thomas Bythess Mortimer, of 37, Kildare-terrace, Bayswater, engineer, trustees for the company about to be registered, it appears that the purchase price was to be 20,000l., or two-thirds of the entire capital, which was to be paid as follows:—20,000l. in cash, and 15,000l. in 6000 shares of 3l. each. The following were the nominees for these shares:—John Kitto, Llanidloes, 500; John Paul, Llanidloes, 187; George Bedford, of Bristol, 50; Charles Quartermaine, Islington, 20; Joseph Nightingale, Barnes, 20; George Ross, Clapham Park, 2500; William Ewing, Glasgow, 10; W. F. Drage, St. Albans, 50; Thomas Delahay, 2553.

I think the following must be considered a very peculiar clause:—"The said company shall not be at liberty to call for the production of the lessor's title, or make any requisition in respect thereof, for the purpose of such assignment or declaration of trust. The sum of 1000l. shall be considered as the apportioned part of the purchase money paid for the transfer of the said lease and such part of the property as is by law required to be conveyed by deed under seal."

I think the remuneration of the management of West Chiverton will most favourably compare with that of the Wye Valley, but perhaps Messrs. Halford and Co. would like to inform your readers what the latter amounts to. I can say this for West Chiverton that if any shareholder wishes to realise he can be freely accommodated, either upon the Stock Exchange or Mining Market with 10s. price, but let any shareholder in any of the companies so strongly recommended by Messrs. Halford and Co. and others throw their shares upon the market, and they will soon find the difference between the buying and selling prices. "The value of a thing is what it will bring," and I should like to see the crucial test applied to any of the companies I have alluded to. West Chiverton does not require any bolstering up, it stands firmly on the foundation of its own intrinsic merits.

Gresham Buildings, Basinghall-street, London.

GRANVILLE SHARP.

## DOWSING AND DIVINING.

SIR.—That any of your correspondents should "sorrow" over me is quite sufficient inducement to me to rush again into print, but let not "Fair Play" sorrow as one without hope, for "I am not dead yet," and although for the time finished "kicking" in the Journal, as "Fair Play" so feelingly expresses it, I do not cease writing because I am convinced—I beg pardon, "beaten." I hate beatings. At this word recollections of the tawse float up the long tide of years—recollections half glad half regretful of the days when "we were boys, merry boys." Science soon takes the mirth out of one. "Fair Play" is evidently a man of war. His description of "N. B.'s" "charge" is worthy of Waterloo—or Dorking—the latter especially, for neither will come off; perhaps because the new wine—I prefer old—is not forthcoming.

But now, Sir, to business. Judging that the multitudinous host of dowsers were determined to have their own way, conscious that the discussion was becoming a matter for mere wordy argument, aware that science was neglected and ignored by the believers in this "mystic rod," I thought it would be better to let them be happy in the enjoyment of their own ideas—that it would be uncalled for to disillusion them of their hobbies of dowsing, clairvoyants, spiritualism, and sentiment. Therefore I left them alone in their glory. Why should one protract a war of words when the onlookers yawn? Surely when we come to peace and watches it is high time to stop. It is necessary to draw the line somewhere. When terms such as "rag and bobtail" are used in a discussion gentlemen may be pardoned for withdrawing, giving the cold shoulder, and I may at least be allowed to wait for "Scrutator's" letter on the subject before making any further remarks.—Oct. 19.

N. B.

## DOWSING AND DIVINING.

SIR.—I have been pleased and amused on reading the letters of your correspondents on this subject. No doubt many of your readers would be able to give a good deal of practical information if they would but put their ideas upon paper; and many would do so, but there are a class of correspondents who ridicule everything which they cannot see clearly themselves, and their sarcastic style prevents others from giving information which would be valuable to the readers of the Journal. I know many practical men who would often write in their own way upon subjects most interesting to the public, but as they say the would-be critics find fault when they do not really understand, and they do it in that ungentlemanly style that those who would otherwise give us their ideas omit to do so. On the above subject, however, I think the discussion has, on the whole, been fairly conducted, without any seeming desire to wound the feelings of those who differed from them.

In the Supplement to the Journal of Oct. 9 there are three letters written in a fair and honest spirit; and, however we may differ from the writers, I give them credit for writing freely what they believe, and leave others to draw their own conclusions. The letter of your intelligent correspondent, Mr. Skewes, appears to be written partly from practical experience, which we have no reason to doubt. I note several remarks made by Mr. Skewes, no doubt with a desire to gain information, as all intelligent men are anxious to do.—1. He says that he learnt a soft hand is favourable to a dowser.—2. More crosses in the hand the better.—3. Must be the firstborn. Excess of iron in the blood, hereditary, animal magnetism, &c. Having paid some attention in my lifetime to medical electricity, I first began to practise on rheumatic patients. When I applied the positive or negative pole of the battery to the same pole of the body I had a counteracting influence, without knowing the cause, and had to learn the why and the wherefore of it. I find it a law in nature when two negatives or two positives come in contact there will be a repelling influence, whilst a negative and positive coming in contact has an attractive influence. This being the case, the negative influence is always the most attractive and susceptible, and on this principle the person who can dowse has more of the negative, or susceptible, influence than a person having the positive influence. Females generally are more susceptible than males, and delicate people are more susceptible than healthy people, so are stout people more so than thin people, and light complexion than dark. Mr. Skewes tells us that soft hands accompany dowsers. Soft fleshy hands generally accompany soft fleshy bodies, and those having such have generally more of what phenologists call lymphatic temperament, or what the Yorkshire man would call taking the world easy. I must express my entire ignorance of Dowsing and Divining, but I am not one of those who would laugh at others because I do not understand it myself, and I venture to say if such a thing exists it is accounted for in the manner here named. Although I know nothing of Dowsing, nor had I heard of such a thing before I read the letters of your correspondents; but admitting its existence, I account for it on the same principle as I do of table turning. The table never will move to a person possessing more of the positive than the negative influence. I have seen the table move to those who did not wish it to move, and who were terrified. I have invariably found the table turn to those people with light complexion, soft hands, and of a susceptible nature. I have seen a few dark complexion people, but not so susceptible as the others. I shall be glad if your correspondents will turn their attention for a moment to the temperament of those persons whom they know to be dowsers. I venture to say that they will find five out of six to be of the description here given. No doubt animal magnetism has to do with it, and it is through this the influence is conveyed to the rod.

Some of your correspondents say that a hazel rod will do best; others say that any kind of a rod will do. This, in my opinion, will entirely depend on the susceptible nature of the person holding the rod. Some say the time of day makes no difference. Not necessarily so, as more will depend on the negative state of the person holding the rod, although he may not know it. The human frame, to my mind, is like a magnet, containing negative and positive poles. This I have proved over and over again, and it can easily be proved by anyone taking the trouble to do so. Although the subject of dowsing is quite new to me, I would not ridicule the idea because I do not understand it; and men who take the lead in anything new must be prepared to be laughed at by the bigotted part of creation, as it appears to be the nature of some people to believe nothing but what their fathers and grandfathers believe. If there is any truth in dowsing or divining it ought to be encouraged—not ridiculed because we do not understand it, nor take the trouble to do so.

The columns of the Mining Journal are a good medium for discussing subjects of this kind, and much may be learnt from the simple expressions and ideas of practical men. If a man differ from me I am most anxious to know how far his views coincide with











of the first men in Dublin, and amongst them were the directors of the Bank of Ireland. In reply to another question, he said there was no fear that the south mine would be flooded, because there were so many outlets that the water would never rise above the level of the river.

The resolution was then put from the chair, and accepted.  
Messrs. B. W. Kelly and Marcus W. Hughes were re-elected as directors, and Mr. Alexander Allen as auditor, of the company.  
The proceedings then terminated.

#### THE DENBIGHSHIRE CONSOLIDATED MINES.

A meeting of shareholders was held at the offices of the company, Great St. Helen's, on Tuesday.

Mr. FRANCIS RUDALL, jun., in the chair.

The circular convening the meeting was read by the secretary, Mr. E. J. BARTLETT.

The CHAIRMAN: The objects for which this meeting is called will be to ascertain from our proprietors as to the advisability of creating debentures, or issuing the shares in reserve to provide the means required for a more rapid and extensive development of the property. I was opposed to the idea of borrowing, but ultimately consented to the resolution which you are asked to-day to carry; but, in these cases, being anxious to consult with our proprietors, we shall not confirm this special resolution, if the shares in reserve, 2198, be absorbed at the discount we propose to issue them at. Before moving that this resolution be adopted I will call upon the secretary to give an explanation of the present operations.

Mr. E. J. BARTLETT: At the last meeting it was stated that apparently two lodes had formed in the 112 east forebreast; our manager, however, drove his level upon one of these for about 60 yards, and for a portion of this distance lead ore of rich quality was obtained. As, however, the vein became less productive and closer, he considered it advisable to cross-cut for the second lode, and within the past few days the intersection has been made; and, judging from present appearances, satisfactory results will now be derived from this part of the mine. At shallow levels large returns had formerly been made, and there was every probability that even greater results could be expected when further progress had been made in opening up the course of the lode. At the western portion of the property the production of lead was resulting. The great feature, however, in the future was the extraction of the ore left in Parry's sump, in the 40 yard level, which was valued by the manager at 3 tons of lead per fathom. Another point worthy of comment was the evidence existing that below the level a great deposit of ore existed; but this could only be worked when larger means were at the disposal of the directors. The plan would be to sink junction shaft deeper, and a satisfactory result might be relied on. In the proposal to issue debentures the directors thought that with a satisfactory future, such as the mine promised, it would be unfair to offer shares, and give others the chance of coming in at the eleventh hour to reap the same advantages of original subscribers. Another feature was that bonds could be paid off, but shares must remain a charge upon profits. However, the bonds were objected to, and in their place it was proposed to issue the 2198 shares at 30s. each. If every proprietor responded sufficient funds would be forthcoming to carry out the extended operations, and the result would be the opening of a profitable mine.

Mr. G. SMITH: The debenture idea is not to me a good one, and while shares are in reserve let them be issued.

Mr. B. BLAND: At the price offered surely every shareholder will respond.  
A SHAREHOLDER: It seems to me that when these shares are placed the mine will be in a good position, and in (say) six months we shall be receiving instead of paying.

The CHAIRMAN: The delay met with has been vexing, but we could have done more if the shares issued in the early part of this year had been all subscribed. I will now move the special resolution, with the understanding that it is not confirmed if the 2198 shares be issued.—Mr. BLAND seconded the motion, which was carried unanimously.

Votes of thanks to the Chairman, directors, and secretary terminated the proceedings.

#### BATTLE MOUNTAIN MINING COMPANY OF NEVADA.

The sixth ordinary general meeting of shareholders was held in the Law Association Rooms, Liverpool, on Wednesday, Mr. JAMES HALLOWS (chairman of the board of directors) presiding.

The report of the directors, which was published in last week's Journal, was taken as read.

The CHAIRMAN, in moving its adoption, said he congratulated the shareholders on the improved prospects, the financial position having improved from a loss of 2489t. 2s. 5d., as shown last year, to a profit of 3462t. 0s. 11d. this year. The produce of the mine had increased both in quantity and quality—say, in quantity 284 tons, in quality the average repay for 1874 was 27½ per cent., and 1875 32½ per cent. Since June 30 they had sold four parcels of ore, which averaged nearly 40½ per cent. This ore was equal to double the quantity raised two or three years since—say 100 tons of this ore is equal in value to 200 previously raised. As regarded the developing of their property, he would not occupy their time by recapitulating what Capt. Richards had so fully described in his report. This report was dated Aug. 3, since which the shaft had been sunk 59 ft. below the 320 ft. level, and they were daily expecting to hear that he was preparing to drive another level. The work done during the past two months showed a falling off owing to the water, the hoisting gear being principally occupied in clearing the shaft. In July the produce was 890 sacks, August 357 sacks, and September 376 sacks. The diminished production did not quite cover the cost. He would now touch on what he considered the turning point in their venture—which was the obtaining of water for the purpose of concentrating the second-class ore. Capt. Richards reported that he had come to the water-level and suspended sinking. This Capt. Nancarrow did not believe, and acting on his advice, they wired Capt. Richards to go on sinking and prove the mine further. The result had been that on renewing the workings the water had varied in the shaft from 6912 gallons in 24 hours to 2304 gallons, the quantity advised by last report. This proved the supply was not to be depended on. Capt. Richards had recommended the purchase of a spring in a neighbouring canyon, which gave a good supply of water winter and summer. This report having been confirmed by Capt. William Nancarrow, formerly their agent at the mine, they had instructed Capt. Richards to endeavour to purchase it. Should they obtain the needful supply of water to dress the second-class ore they would require machinery, and to obtain the machinery they required money. They would, therefore, have to ask the shareholders to take up the debentures which were not issued last year.

The motion having been seconded by Mr. PRYCE, was carried.

On the motion of Mr. A. CASTLEMAN, seconded by Mr. CHAMBERLAIN, a sum of 250t. was placed at the disposal of the directors for their services.

Two directors—Messrs. Campbell and Nancarrow—retiring by rotation and offering themselves for re-election, were re-elected, on the motion of Mr. BROWN, seconded by Mr. CHAMBERLAIN.

Mr. A. W. Chalmers was re-elected auditor, on the motion of Mr. HOUGHTON, seconded by Mr. CHAMBERLAIN.

A vote of thanks was accorded to the Chairman, the board of directors, and secretary (Mr. Robert Cochran), after which the meeting closed.

#### CLIFTON SILVER MINING COMPANY.

The adjourned extraordinary general meeting of shareholders was held on Thursday, at the offices of the company, Great Winchester-street.

Mr. J. C. DAVIS in the chair.

The SECRETARY (Mr. F. Andrews) read the motion calling the meeting.

The CHAIRMAN said: Gentlemen, if you remember, at the last meeting there was a good deal of opposition to the motion that was then brought before the shareholders—"That the company be wound-up voluntarily"—and in consequence a committee of investigation was appointed to report before the adjourned meeting. That committee have drawn up their report and sent it to every shareholder, and I think everyone ought to be very much indebted to them for the trouble they have taken in reading this voluminous correspondence on matters relating to the company. I can only say, gentlemen, that the directors are of the same opinion now as they were at the last meeting, though they do not in any way oppose any reconstruction of the company. I should be only too delighted to see that accomplished; the board only say that they cannot recommend it to the shareholders. Of course, if Mr. Orchard's scheme could be carried out no one would be more thankful to see it than myself, and I am sure that I can say the same on behalf of all the other bondholders. That motion is before the meeting now, and I shall be very happy to hear any discussion on the subject.

Mr. STEPHENSON: What is the position of the company at the present moment?

The CHAIRMAN: The position of the company is fully stated in the circular calling the meeting.

Mr. ORCHARD: I think Mr. Stephenson, perhaps, meant the position of the company in reference to the non-payment of the coupon.

Mr. STEPHENSON: I would also like to know from the Chairman the position of the company in regard to the funds in Colorado.

The CHAIRMAN: You know that there was on Oct. 1 a coupon due, amounting in the aggregate to 82t., for interest on debentures. The company had only 76t. in hand, and therefore they were unable to authorise the bankers to pay this coupon. On that afternoon a 10t. note arrived from Mr. Bradley, accompanied by a request to be allotted a debenture bond. It was mentioned to the trustees. The directors did not receive nor did they refuse it, for the truth is they did not exactly know what to do about it before consulting their legal adviser. Subsequently two other applications for 20t. or 30t. came in, and they have not been accepted yet; in fact, we wished to have this meeting first before doing anything of the kind, so that the shareholders should fully understand that if that money were received it would be applied to the payment of the coupons. We did not feel sure whether we were legally apply that money in that way. That is the only reason why no definite answer has been sent as to whether these debentures would be accepted or not. Since that time our legal adviser says we can do so—we can apply that money for the purpose of paying these coupons, and as a debenture holder I shall be most happy to receive what over interest can be got, only it must be fully understood by the applicants for these debentures that the money will be applied to liquidate the debts of the company.

A SHAREHOLDER: If the money were lodged on the day the coupon was due the bankers were bound to pay the interest.

The CHAIRMAN: We did not feel justified in paying the coupon out of that money. We simply considered the true interest of the shareholders, and acted for the best.

A DIRECTOR: I presume you (Mr. Bradley) make this application and send in this money for the purpose of paying the coupons, and so preventing a foreclosure on the part of the debenture holders?—Mr. BRADLEY: I understood you had so much money in the bank, and so much money was owing by the company, and I thought the sooner that was settled the better for all parties.

The CHAIRMAN: In answer to your question as to the position of things in Colorado, we understand that there is about 560t. or 600t. due to miners for work done on the mine, and they have a lien on the property.

Mr. ORCHARD: And their case will be decided in the November term, and the judgment of the Court will be in their favour as against the company if the amount is not paid before then.

The SECRETARY: The company will then have six months in which to redeem the property by repaying that amount, with the addition of interest at the rate of 10 per cent.

Mr. ORCHARD: Yes; that is Colorado law.

A SHAREHOLDER: Who will work the mine in the interim?—Mr. ORCHARD: Nobody. Is this company liable in any way to the Pittsburg Company?

The CHAIRMAN: We owe it nothing. Now, gentlemen, when I put this motion—that the company be wound-up, it will be negative, but though the directors will at once tender their resignations, you having thus emphatically rejected their advice, they will, of course, be happy to stay in office until the other shareholders have had time to reconstruct and form a new company. I presume that is what is wanted.

The SOLICITOR, in the course of a desultory conversation that ensued, pointed out that it would be impossible to decide upon the winding-up of the company, because there was not present, either personally or by proxy, one-half of the capital of the company. The subject of discussion was the nature of the arrangement to be made assuming the motion was negative and the directors retired. Apparently, there was no way out of the difficulty, or at all events the gentlemen present did not find it.

The CHAIRMAN asked the committee if they had had any encouragement in this scheme?—Mr. ORCHARD replied he had had some encouragement in this way. As mentioned in their report, the committee did not consider it fair that those who were not willing to subscribe any more capital should be a burden upon the shoulders of those who were willing, and, therefore, they had suggested to the proprietors that such shareholders should give up some of their shares to be presented as a sort of bonus to those who did find further capital. That plan had been very generally agreed to. Three influential shareholders had come forward and volunteered to subscribe 150t. per share, but that was of course a small number out of a total proprietary of 125t.

The resolution "That the company be wound-up voluntarily" was then put and negatived.

Some further discussion then ensued, and several suggestions of an impractical character were made, but the Chairman having stated the directors would continue in office until some definite arrangement or plan was decided on by the shareholders, pointed out that there was, therefore, no necessity for any formal resolution.

The proceedings then terminated.

#### NEW ROSARIO SILVER MINING COMPANY.

The sixth ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday.

Mr. JAMES GOODSON in the chair.

Mr. M. HEARN (secretary) read the notice convening the meeting.

The report of the directors stated that very satisfactory progress has been made during the past 12 months in the development of the company's property. The operations, as the shareholders are aware, have been mainly confined to the Providencia mine. On this mine one level, the San Manuel, at a depth of 151 ft., has been driven on the lode the entire length south from shaft a distance of 275 ft. The San Guillermo, which is a continuation of this level north, has been driven also on the lode a distance of 145 ft. from shaft. At a depth of 233 ft. a second level, the San Pedro (south) and San Diego (north) has been driven on the lode a distance of 124 ft., and 48 ft. respectively from shaft. At the present time a third level, 302 ft. from surface, is being driven, and it is satisfactory to note that the quality of the ore is found to improve at every level, the assay of one parcel of ore from the San Pedro having recently shown a value equal to 21t. per ton. In order to prepare the mine for stopping operations, now that a fair range of ore has been laid open by the drivings of San Manuel and San Pedro levels, a winze to communicate these two levels towards the south end is being rapidly sunk. This winze will serve to ventilate the mine, as well as provide additional facilities for stopping and raising the ore. The hacienda is situated about 11 miles from the mine, possesses ample water power, and when in thorough working order is capable of crushing and reducing 1500 cargas, or 225 tons, of ore weekly, though for our present requirements it is not anticipated that more than 500 cargas (75 tons) will have to be treated, and with this view Mr. Cumins is now engaged in having stamps erected, and the requisite machinery put in order. It is estimated that the output, so soon as the communication is effected between the San Manuel and San Pedro levels, will gradually reach up to 500 cargas, or 75 tons weekly, and if the ore maintains the average level of 12 marcos, as is expected, it may be reckoned that the net profits upon 500 cargas weekly will amount to about 10,000t. per annum; this rate of profit will necessarily advance as the mine becomes further developed. The directors have much pleasure in announcing that 6000 of the preference shares have been already subscribed for and duly allotted, and that in addition 1000 shares have been allotted under the agreement with the liquidators of the El Chaco Company for San Pascual hacienda.

The CHAIRMAN said that since the last meeting the prospects of the company had considerably improved, and he thought before the meeting separated the shareholders would concur with the board that they possessed a property of very considerable richness, and from the arrangements recently made for the purpose of promoting the works they would not have long to wait before they received some tolerable remuneration for their long-tried patience. At the last meeting some difficulty existed as to the means of getting the ore treated, but in consequence of the liberality evinced by the shareholders the directors had been able to open negotiations with the proprietors of a hacienda situated some 10 or 12 miles from the New Rosario property, and to make arrangements by which they had secured a very valuable means for dressing the ore, and he believed ore was being reduced now, although not to the extent that would be done presently. The hacienda was costly, but much less—indeed, one-half—than they had been led to expect in the first instance. Now that they possessed a valuable hacienda he hoped to hear before long not that they had obtained a solitary nugget, as they did some years since, but staple coin. The company's operations would not be confined to extracting the ore already opened in the mine, for as additional ground was opened the returns would be proportionately increased. He thought the report pretty well explained the position of the company. The directors had had prepared a sketch of the four sets, by which shareholders could see for themselves the plan of operations. There was one point to which he wished to call especial attention—that, in addition to the Providencia property acquired, they had three other properties, but they demanded more capital to develop than the company could command. They were advised by their superintendent to restrict their attention to that particular sett which presented the greatest prospect of speedily realising profits, and they had selected the Providencia, and that property certainly presented every appearance of quickly rewarding them for their labour and outlay. The other three mines it was utterly impossible to do anything with beyond keeping them alive. He did not know whether by-and-bye the shareholders would not be called together to consider as to the best means to be taken in respect of these three mines; the laws of Mexico required that a mine should be properly worked, and it was impossible for this company to do this with these three mines unless they decided to appropriate profits earned by the Providencia instead of paying the shareholders in the shape of dividends. He should fancy the shareholders would much prefer receiving the profits earned by the Providencia than expending them upon other mines merely for the sake of keeping possession of them. Those three mines were not the entire property of this company; others held an interest in them, and it had been suggested in the event of its becoming necessary, in accordance with the laws of Mexico, to properly work them, that they should be transferred to the parties over there who owned a considerable portion of them. If anything should arise in connection with these mines in consequence of the limited resources of this company, the board would immediately acquaint the shareholders, and take their counsel upon the subject. Circumstances had compelled the directors to forfeit 700 shares, and several proprietors had expressed a wish to take some of those shares if it should be decided to offer them, and the board, in reply, had intimated that they would be sold to the highest bidder. He then moved that the report and balance-sheet be received and adopted.

Major-General DAVISON seconded the proposition, adding that the company was a complete success. He was one of those who, seven years ago, took up some 12,000 shares at par at a time when the company had not 50t. at the bank. Since then they had passed through many difficulties, not the least of which had been to provide for the hacienda; but this had been overcome, and they had now arrived at a position when all their difficulties would be well repaid by handsome dividends. All Mexico and here who knew anything about the mine fully believed its shareholders would be amply repaid for their outlay and patience.

Dr. BEATTIE inquired the amount of the arrears upon the ordinary and preference shares?—The CHAIRMAN said there were due upon the ordinary shares 4413t., and 614t. upon the preference shares.

Mr. W. S. SUTTON enquired the total amount of the available assets?—The CHAIRMAN said the available assets were 2200t. The directors had been remitting rather liberally to Mr. Cummings, so that he could have no excuse on that score;

the cost was between 500t. and 600t. per month. He hoped by next letter they would be advised that ore was being reduced. Under any circumstances there was reason to expect that before that capital had been expended they were realising something from the sale of their produce. They had every confidence in Mr. Cummings, and believed he knew what he was about.

The CHAIRMAN, in reply to further questions, said that the advice by the last mail were to the effect that everything was going on well. The winze referred to in the previous letters had reached the required depth, and they were driving to intersect the vein; he hoped by next mail some favourable intelligence would be received respecting that point.

Mr. SWAFFIELD said that as yet the works at that mine had been only of a limited character, and some little time must be allowed before they could look for any considerable results. He had great confidence in the mine, and believed they would have a good mine by-and-bye; the deepest working was only 50 fathoms. As to Mr. Cummings, from a conversation he had with him before he left for Mexico, he believed he understood the mine thoroughly, and had the company's interests at heart. As to the hacienda, he was glad to find the directors had carried out that which he had indicated at the last meeting. It was satisfactory to find the directors had given up their remuneration—a fact which he thought should not be allowed to pass unnoticed.

Mr. LEONARD WRAY, referring to the hacienda, stated that the directors had thought they might have saved the expense of building, inasmuch as one was being built in the immediate neighbourhood, which had cost 80,000t. Those objections were to have come into operation last January. The board naturally anticipated those works would have been the most suitable place for the reduction of the ore, particularly as all the improved processes adopted in Nevada were to be introduced. This hacienda had been built by Americans, and for that reason he was confident he had not been very sanguine upon the point, as the Americans always managed somehow or other to overwork one. Mr. Cummings sent one to this hacienda upon reasonable terms, but immediately found the "ley" of the ore was made a great deal less than Mr. Cummings made it, and consequently a totally different value was returned. Mr. Cummings, as a man of prudence, abstained from sending any more ore there. Afterwards the boiler at the hacienda burst, and after having expended 80,000t. the whole affair collapsed.

A SHAREHOLDER asked the cost of the hacienda the company had provisionally purchased?—The CHAIRMAN said they were originally asked 10,000t., one-half in cash, but by giving 1000 preference shares they had succeeded in completing an arrangement, by which they undertook to pay as rent 550t. for the first year, 700t. the second, and 800t. the third and four succeeding years, and in the event of the company being in a sufficient state of funds they had the option of purchase for 4000t.

Mr. LEONARD WRAY said he had negotiated the transaction in respect of the hacienda, by which he had succeeded in buying the option of purchase by giving 1000 preference shares and 500t. in cash.

The CHAIRMAN, in reply to a question, said it was suggested at the last meeting that the directors should consent to receive one-half fees, carrying the remainder to a suspense account; but since then the directors had thought it better not to take any fees until the mine had been brought into a dividend-paying condition. The directors had not been very insignificant contributors to the capital. (Hear.)

The report and accounts were received and adopted. It was agreed that henceforth half-yearly general meetings should be held. The retiring directors were re-elected.

Canon FREW took the opportunity of thanking the directors for their liberality in relinquishing their fees.—The auditors were re-appointed.

A vote of thanks to the Chairman and directors closed the proceedings.

WHEAT BASSET AND GRYLLS.—At a special meeting of adventurers, held on Oct. 15, the accounts to end of August showed a balance of profit on the four months' working of 32, 12s. 8d. Capt. Joseph Prisk was elected a member of the committee in the place of Mr. F. W. Michell, who has ceased to be a shareholder. Capt. Prisk having stated that he expected to make a small profit on the working during the ensuing quarter, it was resolved that the balance against the adventurers on the cost-book of 1640t. 7s. 6d. be carried on. Capt. Prisk says the number of hands employed is as follows: underground, 8; smith, 1; carpenter, 1; enginemen, 2; spallier, 1; bruising samples and other work, 1; dressing tin, 1; watching stamps, 1; boys on stamps floors, 10; girls, 17, total, 52.

#### THE SILVER MINES OF SANTA EULALIA, MEXICO.

In 1703 three malefactors of the then small town of Chihuahua, Mexico, flying from justice, betook themselves to the surrounding mountains, and there for several weeks lived a life of terror, moving about from fastness to fastness in constant dread of the fierce Apaches who occupied the territory on the one hand, and of their pursuing white brethren on the other. One evening they built a large fire in a ravine to cook their supper, and when the surrounding boulders became heated a molten white metal issued out of them. The next day a friendly Indian arrived in Chihuahua, bearing a message from the fugitives to the priestly authorities, offering as a condition for their pardon enough silver to build a cathedral, which offer was accepted. Such is the story of the discovery of the silver mines of Santa Eulalia.

The State of Chihuahua is in the extreme north-east of Mexico. It is separated from the State of Texas on the north-east by the Rio Grande, and is bounded on the north by New Mexico and Arizona. The City of Chihuahua is the capital. The mines, of which there are several, are all situated in a mountain about 12 miles distant from the city. It rises above the surrounding plain to a distance of between 1000 and 2000 feet, and is popularly known as the "Silver Mountain of Santa Eulalia." Wonderful stories are told of the wealth of these mines. They were constantly worked by the old Spanish proprietors from the time of their discovery in 1703, until 1822, the year of the revolution that drove the Spaniards out of the country. During this period Chihuahua grew from a mere outpost of the Jesuit missionaries into a city of 56,000 inhabitants, while the mining village of Santa Eulalia and another sprang up in the gorges of the mountain, containing respectively 8000 and 5000 souls. From a tax of one real (12½ cents) on every mark (pound) of silver, as it came from the refining furnaces, there was built, between 1758 and 1760, the celebrated Cathedral of Chihuahua, at a cost of over 960,000, and with the surplus was erected another church in the village of Santa Eulalia at a cost of \$100,000. While Mexico was in possession of the crown of Spain, the laws of that kingdom required one-fifth of the product of all the mines of gold and silver to be paid into the royal treasury. This made it necessary for the mining proprietors to make returns of the products of their mines to the king's officers. These records were kept with Spanish formality in the different mints of the viceroyalty; and the records of the mint of Chihuahua which are still preserved, show that nearly 5500,000,000 were registered at that office, most of which was the production of the mines of Santa Eulalia.

The revolution, the empire of Iturbide, and the establishment of the Republic involved a struggle of 14 years, which greatly crippled the resources of the country. Then, four years later came the expulsion of the Spaniards, who were the capitalists, and this was followed by constant internal revolutions, alternating with war with Texas, France (in 39), the United States, growing out of the annexation of Texas, and the conquest of Maximilian. These and the ravages of the Indians, who claimed the mining districts, paralysed Mexican industry, and put a long stop to the development of riches that had hitherto been considered inexhaustible. A writer in "Harper's Magazine," who visited the silver mountain in 1897, gave a description of the untold treasure that lay in the bowels of the mountain, of sufficient capital and energy that was disposed to grasp them. The mountain, according to the writer, is one solid mass of silver ore, averaging from 850 to 1150 per ton, with occasional pockets panning out as high as 8500 per ton, and still rarer finds of pure metal. The ore is embedded in hard limestone chambers, which are always entirely free from water, and never require timbering. The country being extremely difficult for the transportation of machinery, only the rudest appliances were ever used. The ore was carried up out of the mines in sacks, on the backs of workmen, on primitive ladders. It was then either rolled on the spot or put on the backs of asses, and transported seven miles to water. The proprietors of the reduction works on the ground built an aqueduct of stone for the transportation of water to the mines, 13 miles long. This aqueduct still exists unimpaired, and is said to be a marvel of engineering skill and solidity. The furnaces used were of the simplest kind. They were constructed of adobe mud, and were utterly incompetent to extract a tithe of the metal contained in the ore. In 1867 the writer of the article mentioned saw one of the rude furnaces at work, and narrates that the few lazy persons who remained of the thriving village of Santa Eulalia picked up a good living by breaking open the hills of roasting slag that remained after a century and a half of primitive reduction, and gathering the lumps of silver that fired it in all directions. The writer descended into all the mines in the mountain, and found them alike in the quality and universality of ore. Two of them also contained a "flux," which the Spaniards found useful in smelting.

THE TEN STANDARDS.—No further official notification has appeared since the advance in the tin standards of 2s. 2d. per cwt. on the 23rd ult. The standards now are—Common, 82s.; refined, 83s. The smelters' quotations are—Common, 90s.; margin, 8s.; refined, 92s.; margin, 9s. Current prices: Banca, 91t.; Straits, 82t. 10s. to 86t.; Australian, 83t. to 85t. 10s. The best western tin ore now fetches 54t. 10s. per ton, but purveyors are very unwilling to sell at that price. Some mineral has gone to the eastern part of the country. Capt. Boyss, of Wheel Owles, wants 62t. per ton for his tin.

THE CONSOLIDATED IRON MINES CORPORATION.—A meeting of the Trustees of this corporation was held at the office of Messrs. Hodge, Hockin, and Marks on Wednesday, and the result was that they have instructed the solicitors to obtain the opinion of counsel as to the liabilities of the persons forming the corporation.

CORNISH MINING SHARE MARKET.—During the week there has been a steady business doing in the share market at about last week's prices, and quotations have but little altered. There has been a fair demand for good tin stock, which appears to be held for higher prices. An improvement is reported at Wheal in the where it is said they have cut the East Pool lode; there is nothing doing in the shares yet, price nominally 15s. to 25s. One or two other mines are too mid-toe looking well which have not yet been brought into the market—South Tolcarne, which promises well, and West Roskear, about which some parties are very sanguine. The following are the closing prices:—Carn Breas has been a little dealt in at 58 to 60. Cooke Kitchen shares have been steady at 8 to 8½. A fair business has been done in Dolcoath at 47 to 48. East Carnadon, 2 to 2½; the mine is said to be looking better. East Pool shares have advanced from 14½ to 15½. 15½t. closing firm and in demand. East Lovell called 7½ to 8½. Kilflit shares have been moderately dealt in at prices varying between 18s. and 20s., closing 18 to 19½. Providence enquired for, and shares changed hands at 2½ to 3½, closing 2½ to 3½. Rosewell Hill shares, nominally 6s. to 8s. More business has been done in South Carn Breas shares at 32s. 6d. to 35s. South Condurrow shares have advanced from 8½ to 9½, and are more enquired for again; these shares are likely to go better. South Crofty shares have received a fair amount of attention, and fluctuated between 27, 28 and 24, to which they fell, and close 26½ to 27½. South Frances enquired for at about 9. Nothing doing in North Bay, nominally 6½ to 7½. Tincroft shares continue steady, 26 to 27. West Basset, unaltered, 8½ to 9½. West Seton shares advanced to 90, 100. West Frances, 9 to 10; more water is being met with in the 140 cross-cut, which is regarded as indicating a near approach to the West Basset great flat lode. West Tolgus neglected, 54 to 60. Wheal Agnes, 3 to 4. Wheal Jane shares are flat at about 3, and scarcely anything has been doing in them. Wheal Jane shares have been a little more dealt in at 3½ to 4. Unity Wood, 20s. to 22s. 6d.; more business is doing in these shares again; mine looking well. Wheal Owles, nominally 150 to 170.—West Briton.



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GAUZE MANUFACTORY,

Established Half-a-century.

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## DUNN'S ROCK DRILL,

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Steel Colliery Wheels

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Hydraulic Cylinders, Pinions, Shio-propellers, Railway Crossings, Skifles for Ploughs, &c.

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MANUFACTURERS OF EVERY DESCRIPTION OF

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AGENTS WANTED in all Mining Districts for the LANDAU MINERS' LIFE PROTECTING LAMP. For particulars, apply to Messrs. LANDAU, Coal Merchants, and Manufacturers of several important Inventions, 220, HIGH HOLBORN, LONDON, W.C.



STRONGLY RECOMMENDED! HIGHLY APPRECIATED!!

THE LANDAU

MINERS' LIFE-PROTECTING LAMP.

The objects attained by the Patent Lamp are:—

- 1.—It is a perfect safeguard against explosion.
- 2.—Great brilliancy of light at a very small expenditure of oil.
- 3.—It is in no way affected by the strongest current of air in the mine.
- 4.—It is impossible for the miner to tamper with it with impunity.
- 5.—All the above improvements can be adapted by Messrs. Landau to any other lamps at present in use.

Important testimonials, confirming the above statements, will be forwarded on application by—

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THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM

(DAILY), and SOUTH WALES GAZETTE

(WEEKLY), established 1867,

the largest and most widely circulated papers in Monmouthshire and South Wales

CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the second edition at Five P.M. On Friday, the "Telegram" is combined with the "South Wales Weekly Gazette," and advertisements ordered for not less than six consecutive insertions will be inserted at a uniform charge in both papers. P. O. O. and cheques payable to Henry Russell Evans, 14, Commercial-street Newport, Monmouthshire.





PARIS EXHIBITION, 1867.



VIENNA EXHIBITION, 1873.



LONDON EXHIBITION, 1874.



CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

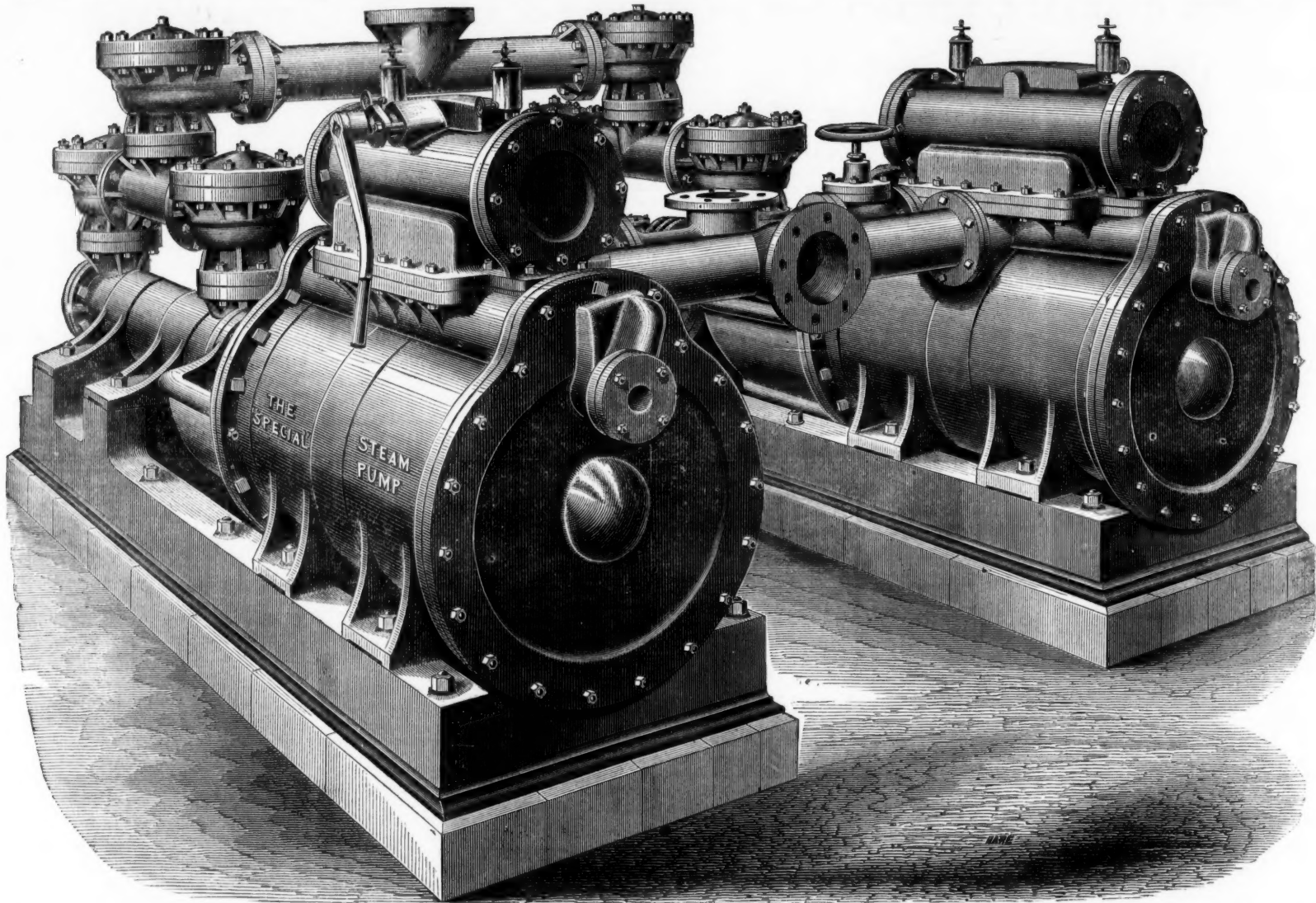
# TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.,  
AND BIRMINGHAM. (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

## THE "SPECIAL" DIRECT-ACTING STEAM PUMP.

OVER 12,000 IN USE IN ENGLAND AND AMERICA.

SUCCESSFULLY ADOPTED IN A LARGE NUMBER OF MINES IN THIS COUNTRY AND ABROAD.



PAIR OF THE "SPECIAL" DIRECT-ACTING STEAM PUMPS SUITABLE FOR HIGH LIFTS IN MINES, SIMILAR TO MANY SUPPLIED BY TANGYE BROTHERS AND HOLMAN.

The following extract from a letter, received by Tangye Brothers and Holman from J. Bigland, Esq., dated Feb. 25, 1875, refers to a "Special" Direct-acting Steam Pumping Engine supplied four years ago to Messrs. Joseph Pease and Partners, for the Adelaide Colliery, Bishop Auckland. The engine is throwing about 8000 gallons per hour, 1040 feet high, in one direct lift:—  
"The underground pumping engine at Adelaide Colliery is working night and day. It does its work satisfactorily, and gives us very little trouble. Some of the cup leathers which form the plunger packing have worked three months. The working barrel is in beautiful condition. The average duration of the valve seats is about eight months; they work and keep tight as long as there is a bit of them left. I expect the valves (Holman's patent) and the buffers will last as long as the colliery."

Extract from a letter received by Tangye Brothers and Holman from W. H. Eagland, Esq., dated Feb. 27, 1875, in reference to a "Special" Direct-acting Steam Pumping Engine supplied two years ago to the West Yorkshire Iron and Coal Company near Leeds, to throw 16,000 gallons per hour, 465 feet high, in one direct lift:—  
"It is at work night and day. Our man goes down to the pump twice a day (Ten A.M. and Four P.M.), to supply the tallow cups. After this it is left every day till he comes next morning, when he goes down again at Ten A.M. as before. The only repairs the pump has had for 12 months are one bucket, which had worked since we got the pump, and one valve seat, but no valve, so it has cost very little. Its first lift is 70 yards perpendicular, then the water passes up pipes for half a mile, ascending another 70 yards, and then another perpendicular pipe of 18 yards—total, 155 yards vertical height."

Extract from the Official Report of the Commission of the German Empire on the Vienna Exhibition of 1873, treating on Pumping Engines:—  
"Contrary to these older pumping engines exhibited, there is now nearly everywhere the opinion established that the ('SPECIAL') pumping engines placed underground, which are made on A. S. Cameron's principle by Messrs. Tangye, are preferable to all. They do much duty combined with great compactness. They dispense entirely with the troublesome rod arrangement, giving often rise to stoppages, so that they will be applied shortly to a great extent, and are already in use in many localities. There is no doubt that this in every respect practical system will command a general adaptation."

### 200 SIZES AND COMBINATIONS OF THESE PUMPS ARE NOW MADE.

The following are a few of the Sizes for High Lifts in Mines:—

Diameter of Steam Cylinder .....	In.	7	8	9	9	10	10	12	12	12	14	14	14	16	16	16	16	18	18	18	18	21	21	21
Ditto of Water Cylinder .....	In.	3	3	3	4	3	4	3	4	5	4	5	6	4	5	6	7	5	6	7	8	5	6	7
Length of stroke .....	In.	24	24	24	24	36	24	36	36	36	36	36	36	36	36	36	36	48	36	36	36	48	48	36
Gallons per hour approximate .....		1830	1830	1830	3250	1830	3250	1830	3250	5070	3250	5070	7330	3250	5070	7330	9750	5070	7330	9750	13,000	5070	7330	9750
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump		325	425	540	300	665	375	960	540	345	735	470	330	960	615	426	312	775	540	400	300	1058	740	540

CONTINUED.

Diameter of Steam Cylinder .....	In.	21	21	21	24	24	24	24	26	26	26	26	26	30	30	30	30	32	32	32	32	32	32	32
Ditto of Water Cylinder .....	In.	8	9	10	6	7	8	9	7	8	9	10	12	8	9	10	12	14	8	9	10	12	14	14
Length of stroke .....	In.	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate .....		13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	9750	13,000	16,519	20,000	30,000	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump		413	326	264	960	700	540	427	345	827	633	500	405	282	840	665	540	375	275	960	758	625	426	313

PRICES OF ABOVE ON APPLICATION.—FOR SIZES AND PRICES OF PUMPS FOR LOWER LIFTS SEE SEPARATE LIST.

HOLMAN'S PATENT CONDENSER will be found a great acquisition to all kinds of Steam Pumps, as not only is the exhaust steam completely condensed, and the annoyance from same blowing off entirely got rid off, but a vacuum is obtained in the steam cylinder saving from 20 to 50 per cent. in fuel, and increasing to a considerable extent the economy and efficiency of the Pump.

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SOUTH WALES HOUSE ... TANGYE BROTHERS AND STEEL Tredegar Place, NEWPORT, Mon.; and Oxford Buildings, SWANSEA.



# THE "LEVET" ROCK DRILL.

SUPERIOR TO ALL OTHERS.



COPY OF TESTIMONIAL FROM THE ENGINEER, BLANZY MINES, FRANCE. Feb. 25, 1875.

I hereby certify that the new Rock Drill of C. Levet's System has worked at the Blanz Mines since Nov. 20 without there being the slightest necessity for repair. Its results up to this date have been superior to the other Rock Drills employed in the said mines. (Signed) THE ENGINEER OF THE MINES, POUZAIRES.

THE SACCHARUM WORKS, SOUTHAMPTON. ANGLO-BAYARIAN BREWERY.

GENTLEMEN.—We have much pleasure in stating that the "STANDARD" Steam Pumps supplied to us for these works, and for our Brewery at Shepton Mallet, give us entire satisfaction. The two first we had from you have been in use for 12 months, and they are still in good working order. THEY ARE ENTIRELY FREE FROM THE NOISE IN WORKING WHICH ALL OTHER STEAM PUMPS WE HAVE TRIED ARE SUBJECT TO; they throw a large quantity of liquor fully equal to the amount named in your Circular, and we can confidently recommend them in preference to any other pumps we have used. Yours truly, HILL, GARTON, AND CO.



FOR PARTICULARS OF

ROCK DRILLS, AIR COMPRESSORS, COAL CUTTERS, "STANDARD" PUMPS,

AND ALL OTHER MINING MACHINERY, APPLY TO

**CHARLES HARWOOD & CO.,**

St. Stephen's Chambers, Telegraph-street, Moorgate-street, LONDON, E.C.

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ST. JOHN'S LEATHER AND INDIA-RUBBER WORKS, NEWCASTLE-UPON-TYNE.

Every description of Leather, India-rubber, and Gutta-percha for Engineering and General Mechanical purposes.

The ONLY PRIZE awarded for "FUEL ECONOMISERS" at the Vienna, Paris, and Moscow Exhibitions, was given to

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AN INDISPENSABLE APPENDAGE TO STEAM BOILERS.



MOSCOW, 1872.

In operation to upwards of 2,550,000 h.p.



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SAVES 20 to 25 per cent. of Fuel.



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## THE "BURLEIGH" ROCK-BORING COMPANY, LIMITED.

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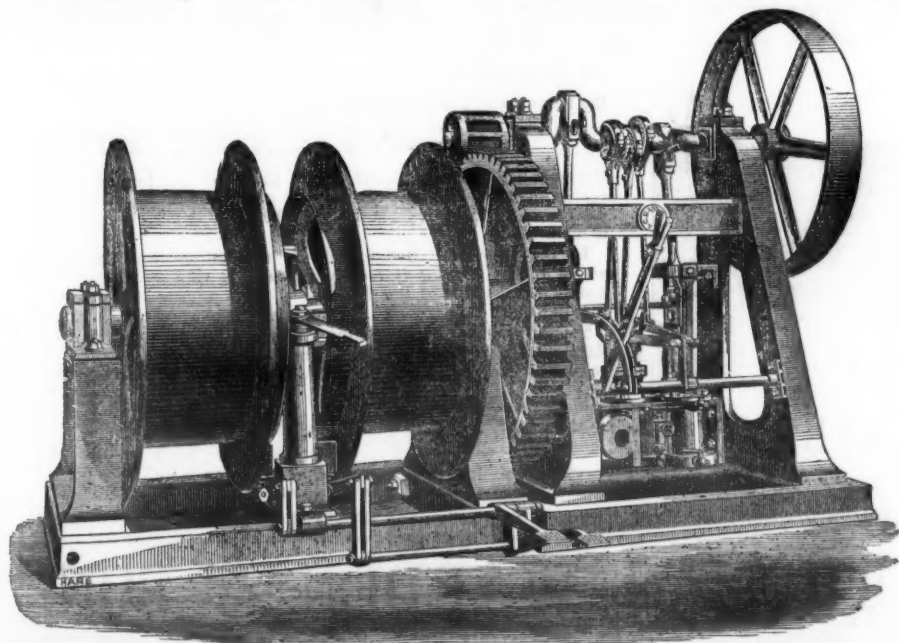
For Sinking Shafts, Cutting Tunnels and Levels, and General Rock Boring Operations, by contract, and for the Sale or Letting on hire of the "BURLEIGH" ROCK-BORING MACHINES.

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IMPROVED DESIGN of Engine for HAULING, for use with either Steam or Compressed Air. Takes less room, and can be supplied for less money, than any other Engine of same power.

May also be had with single drum for winding.

## ASHWORTH'S IMPROVED STEAM RAM PUMPS.

AWARDED First Prize MEDALS

AT

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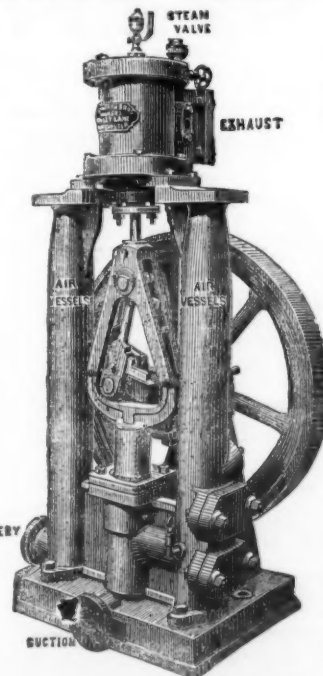
MANCHESTER AND LIVERPOOL SHOWS September, 1874.

For Neatness, Simplicity, and Efficiency.

Useful to Mill-owners, Colliery Proprietors, Chemical Works, Paper Works, &c.

Single & Double RAM PUMPS of all sizes.

Full particulars on application.



ASHLEY LANE MANCHESTER.

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**Ore Crushers, with H.R.M.'s  
New Patent Crushing Jaws,  
EXTENSIVELY USED BY  
MINE OWNERS, &c.  
OVER 1150 NOW IN USE.**

New Raff Wheel Machine, fitted with H.R.M.'s Special Jaws for Crushing Stone, &c., to Fine Powder.

**H.R. MARSDEN, LEEDS,**

PATENTEE, AND ONLY MAKER IN THE  
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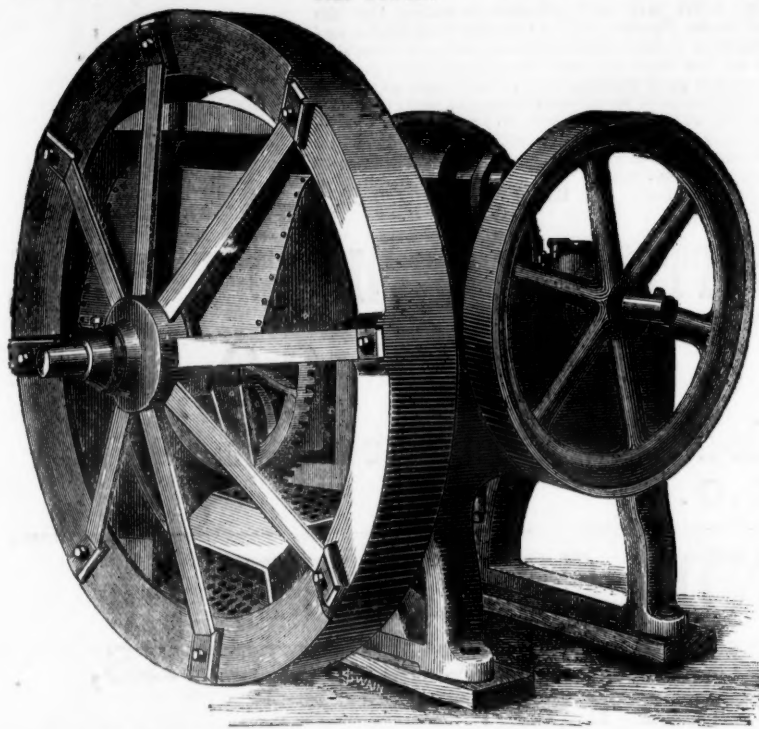
Intending Buyers are cautioned against purchasing any infringements of H. R. M.'s numerous Patents.

**Great Improvements in Mining  
Machinery by the use of**

H. R. M.'s

**NEW RAFF-WHEEL MACHINE,**

WITH NEW PATENT CRUSHING JAWS,  
BY WHICH ORES OF EVERY DESCRIPTION CAN BE  
REDUCED TO FINE POWDER.

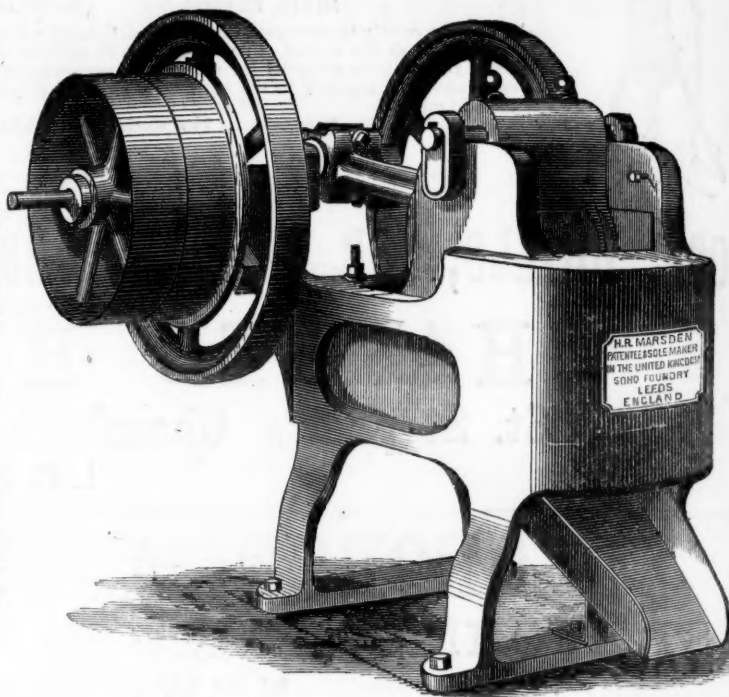


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Machines fitted with  
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PATENT CUBING  
JAWS, by which stone  
is broken equal to hand  
at ONE-TENTH THE  
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FEW WORKING  
PARTS.  
SMALL WEAR and  
TEAR.  
SIMPLICITY OF  
CONSTRUCTION, &c.

THE ONLY ORE  
CRUSHERS WHICH  
COMBINE AND EM-  
BRACE THE TRUE  
PRINCIPLES OF AC-  
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STRUCTION FOR THE  
PURPOSE  
DESIGNED.



For Catalogues, Testimonials, &c., apply to—

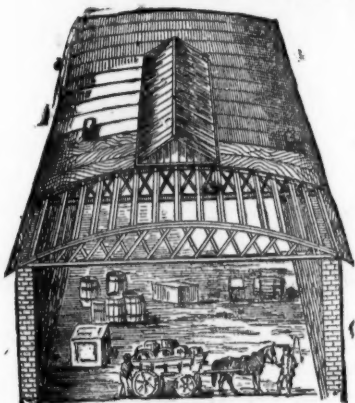
**H. R. MARSDEN, Patentee & Sole Maker, SOHO FOUNDRY, LEEDS, ENGLAND.**

**M'TEAR AND CO'S CIRCULAR  
FELT ROOFING,**

FOR  
GREAT ECONOMY  
AND  
CLEAR WIDE SPACE.

For particulars, estimates,  
and plans, address,—

M'TEAR & CO.,  
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4, PORTLAND STREET,  
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OR  
CORPORATION STREET,  
BELFAST.



The above drawing shows the construction of this cheap and handsome roof, now much used for covering factories, stores, sheds farm buildings, &c., the principal of which are double bow and string girders of best pine timber, sheathed with 1/2 in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine lightness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 30s. to 50s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

INODOROUS FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

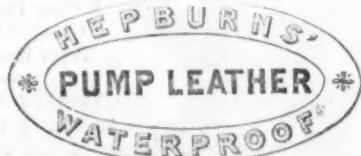
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OFFICES:  
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FOUNDRY:  
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INGOTS, Nos. I and II, suitable for Pumps, Pinions,  
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Special Phosphor Bronze Bearing Metal £120 per ton  
CASTINGS, Wire Ropes, Tuyeres, &c., of all descriptions  
executed at the shortest notice.



By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

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ANNERS AND CURRIERS, LEATHER MILLBAND AND ROSE PIPE  
MANUFACTURERS,  
LONG LANE, SOUTHWARK, LONDON  
Prize Medals, 1851, 1855, 1862, for  
MILL BANDS, ROSE, AND LEATHER FOR MACHINERY PURPOSES.

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Manufacturers of

**CRANE, INCLINE, AND PIT CHAINS,**

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions, STOURBRIDGE FIRE BRICKS AND CLAY.

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For WATER SUPPLY to TOWNS, LAND IRRIGATION, and MINERAL EXPLORATIONS, may be executed of any diameter, from 6 in. to 36 in., and to any depth to 2000 ft.,

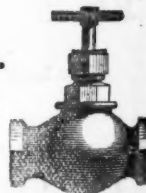
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of which upwards of 8634 have been made to March, 1875.



**MATHER AND PLATT,**  
MAKERS OF LARGE PUMPS AND PUMPING ENGINES.  
**Improved Valves and Taps for Water, Steam, Gas, &c.**

PATENT STEAM EARTH-BORING MACHINE  
ENGINEERS and MACHINE MAKERS to CALICO PRINTERS, BLEACHERS, DYERS, and FINISHERS.

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PRICES AND PARTICULARS ON APPLICATION.



**IMPORTANT TO STEAM USERS.**

THE BARROW SHIPBUILDING COMPANY (LIMITED), having purchased the Patents and Business of the

**"HOWARD SAFETY BOILER,"**

Desire to call the attention of Steam Users to some important improvements recently introduced in these Boilers, by which any points of objection to previous designs are entirely overcome, whilst the valuable principle, so widely recognised, is retained.

In the improved Boiler there is neither welding or screwing, and the whole of the interior is readily exposed to view and cleaned out. The more simple construction of the improved Boilers admits also of a substantial reduction in price.

Twenty of the Howard Safety Boilers, of 60-horse power each, are in use at Barrow, and altogether about 800 are successfully at work. The Boilers may also be seen at work at Messrs. J. and F. Howard's, Britannia Ironworks, Bedford.

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SECOND-HAND RAILS, AND EVERY DESCRIPTION OF RAILWAY, COLLIERY, AND CONTRACTORS PLANT  
ALWAYS ON HAND.